

DOCUMENT RESUME

ED 229 506

CE 032 710

TITLE Classification Structures for Career Information. Occupational Statements, Volume I. Part 3. SOC Numbers 6699 to 9900. Interim Edition.

INSTITUTION Ohio State Univ., Columbus. National Center for Research in Vocational Education.; Wisconsin State Occupational Information Coordinating Council, Madison.; Wisconsin Univ., Madison. Vocational Studies Center.

SPONS AGENCY National Occupational Information Coordinating Committee (DOL/ETA), Washington, DC.

PUB DATE 81

GRANT 99-0-1449-17-17

NOTE 219p.; For related documents, see CE 032 708-715.

PUB TYPE reference Materials -
Vocabularies/Classifications/Dictionaries (134)

EDRS PRICE MF01/PC09 Plus Postage.

DESCRIPTORS Career Counseling; Career Guidance; Career Planning; Computer Oriented Programs; *Databases; Information Systems; *Occupational Clusters; *Occupational Information; *Occupations; Online Systems; Reference Services

IDENTIFIERS Career Information Delivery Systems; Dictionary of Occupational Titles; *Standard Occupational Classification

ABSTRACT

"Classification Structures for Career Information" was created to provide Career Information Delivery Systems (CIDS) staff with pertinent and useful occupational information arranged according to the Standard Occupational Classification (SOC) structure. Through this publication, the National Occupational Information Coordinating Committee provides technical assistance to states to assist them in converting their existing CIDS to a SOC structure. A secondary purpose of the publication is to provide counselors with a compendium of occupational information compiled from a great variety of sources. The publication is organized in three volumes. This first volume, divided into three parts, contains the 1980 Standard Occupational Classification (SOC) codes and titles in a four-level taxonomy. Subtitled "Occupational Statements," this volume is primarily designed for counselor/client use. It also contains information useful to people using the SOC to classify information obtained from surveys, preparing information for a CIDS, or for other technical purposes. The Occupational Statements contain a brief guidance-oriented definition for each of the 834 categories contained in the 1980 SOC. In those cases where a SOC category has been assigned Dictionary of Occupational Titles (DOT) codes and titles, this additional information is included: sample work activities, hours of work, travel, and sample places of work. [This document contains part 3 of volume I--SOC numbers 6699 (precision production occupations) to 9900 (miscellaneous occupations); and a numeric index.] (KC)

ED229506



NOICC

**National Occupational
Information Coordinating
Committee**

CLASSIFICATION STRUCTURES FOR CAREER INFORMATION

OCCUPATIONAL STATEMENTS, VOLUME I

PART 3 SOC Numbers 6699 to 9900

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INTERIM EDITION

1981

CE032710

CLASSIFICATION STRUCTURES

FOR

CAREER INFORMATION

Staff

Wisconsin Occupational Information Coordinating Council
Shelley Cary, Director

Vocational Studies Center, University of Wisconsin-Madison
Merle E. Strong, Director

Roger Lambert - Project Co-Director

David Caulum - Project Co-Director
Author: Volume III, Technical Information

Ron Myren - Computer Systems Analyst

Nancy Howard - Author: Occupational Statements

The National Center for Research in Vocational Education
Robert E. Taylor, Director

Harry Drier - Project Director

Fred Williams - Specialist

Consultant

Melinda Salkin - Author: Occupational Statements

These materials were developed under a grant with the Wisconsin Occupational Information Coordinating Council and subcontracted to the Vocational Studies Center and the National Center. A separate contract was written with Melinda Salkin. The National Occupational Information Coordinating Committee (NOICC) funded this research and development. Any opinions expressed, unless so stated, do not necessarily reflect position or policy of NOICC.

Project Officer, John Van Zant
NOICC
Grant No. - 99-0-1449-17-17

CLASSIFICATION STRUCTURES FOR CAREER INFORMATION

CSCI

Volume I: Occupational Statements

- Part 1: SOC Numbers 1099 to 4490
- Part 2: SOC Numbers 4499 to 6560
- Part 3: SOC Numbers 6699 to 9900
- Numeric Index

Volume II: Occupational Characteristics

- Part 1: SOC Numbers 1099 to 4490
- Part 2: SOC Numbers 4499 to 6560
- Part 3A: SOC Numbers 6699 to 7679
- Part 3B: SOC Numbers 7700 to 9900
- Numeric Index

Volume III: Technical Information

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6699 PRECISION PRODUCTION OCCUPATIONS

These workers make products or perform services that require skill and attention to detail. They may work by hand or by machine, setting type, tailoring clothes, or making parts for machines. They may cut meat, make furniture, or assemble electronics components. Some run power-generating or processing plant equipment. They use precision instruments, instructions, gauges, and measuring devices to complete and check their work.

67 SUPERVISORS; PRECISION PRODUCTION OCCUPATIONS

These people supervise workers who do precision production, processing, finishing, or repair work. They study schedules and determine the workers and equipment needed for assignments. They interpret company policies, and job orders to workers and assign duties. They determine work procedures and schedules, enforce rules, and solve difficult work problems. They may hire, train, and discharge workers. They keep work records, and may order needed materials and equipment.

SAMPLE WORK ACTIVITIES

- Supervise workers who:
 - . Do precision laundry or dry cleaning work
 - . Repair and refinish shoes
 - . Operate equipment in an oilfield
 - . Install ships' machinery
 - . Build and repair wooden cabinets
 - . Make jewelry
 - . Make and repair dental fixtures
 - . Operate and maintain steam engines and air compressors
 - . Make printing plates
 - . Process photographs
- Determine the order in which work should be done, in order to provide quick service and to regulate the workload
- Order materials and supplies
- Assign new workers to experienced workers for training
- Review production and accounting records to determine the costs of different operations
- Plan work schedules and issue orders to workers
- Inspect work to see if instructions were followed
- Use precision instruments to check finished work
- Investigate customer complaints
- Talk with workers to resolve problems, complaints, and grievances
- Prepare budget, inventory, and worker evaluation reports
- Recommend that workers be hired, promoted, or fired

HOURS OF WORK/TRAVEL

- These SUPERVISORS work in a variety of industries. Work hours vary. Some jobs may require shift work or evening, night, and/or weekend work.
- Some of these jobs involve work at oil fields or other remote places. Some workers may be away from home for weeks or months at a time.

SAMPLE PLACES OF WORK

- Companies that make or repair products such as:
 - . Balances and scales
 - . Chemicals
 - . Electrical equipment
 - . Furniture
 - . Jewelry
 - . Pens and pencils
 - . Ships and boats
 - . Textiles
- Businesses that do such work as:

- . Cleaning and maintenance
 - . Dry cleaning
 - . Dyeing
 - . Electroplating
 - . Engraving
 - . Laundering
 - . Photofinishing
 - . Printing and publishing
 - . Woodworking
- Petroleum refineries
 - Woodworking shops
 - Foundries
 - Utility companies
 - Any industry

68 PRECISION PRODUCTION OCCUPATIONS

These workers make products or perform services that require skill and attention to detail. They may work by hand or by machine, setting type, tailoring clothes, or making parts for machines. They may cut meat, make furniture, or assemble electronics components. Some run power-generating or processing plant equipment. They use precision instruments, instructions, gauges, and measuring devices to complete and check their work.

681-2 PRECISION METAL WORKERS

These workers make or assemble machine parts, boilers, sheet metal products, and jewelry. They may make molds for metal parts or engrave the surface of metal objects. They may cut, shape, cast, file, or grind metal to achieve the exact specifications for the product they are making. They may make tools or machine automobile parts. Some workers may assemble products and check precision while others use design and math skills to plan products and work methods.

6811 TOOL AND DIE MAKERS

TOOL AND DIE MAKERS make machine-shop tools, jigs, fixtures, instruments, and metal-forming dies. TOOLMAKERS produce jigs and fixtures (devices that hold metal while it is shaved, stamped, or drilled). They also make gauges and other measuring devices used in making precision metal parts. DIEMAKERS construct metal forms (dies) to shape metal in stamping and forming operations. They also make metal molds for diecasting and for molding plastics. These workers also repair tools and dies.

SAMPLE WORK ACTIVITIES

- Study blueprints of die models to plan how work will be done
- Measure, mark, and scribe metal stock to lay out work pieces for machines
- Set up and operate machine tools such as lathes, milling machines, drill presses, shapers, and grinders
- Lift machine parts by hand or use a hoist to position them on the work table
- Use stones, files and grinders to smooth, shape and fit flat and curved parts of tools
- Check the size and alignment of parts using dial indicators, gauge blocks, and micrometers
- Bolt parts together
- Use vises to secure parts on the worktable
- Polish dies with a polishing machine
- Chip and cut away excess metal to complete a die design
- Install, set up, and adjust jigs and fixtures at a workbench

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Plants that produce manufacturing, construction, and farm machinery
- Automobile, aircraft, and transportation equipment industries
- Small tool and die shops
- Electrical machinery and fabricated metal industries
- Companies that make or repair balances and scales, cutlery and tools, jewelry, paper goods, or wire
- Printing and publishing firms

6812 PRECISION ASSEMBLERS (METAL)

PRECISION ASSEMBLERS(metal) follow blueprints and detailed drawings to put together machinery and equipment. They assemble such things as engines, turbines, boats, musical instruments, sewing machines, and farm and mine machinery. To do their work, they use precise measuring instruments, handtools, and power tools. They cut, shape, file, and drill holes in metal parts. They also fit, bolt, screw, rivet, or solder metal parts together.

SAMPLE WORK ACTIVITIES

- Drill and tap holes in metal parts so they can be assembled
- Use a hoist to position parts in the frame of a machine
- Remove burrs and rough surfaces from metal parts with a hand file or portable grinder
- Put together machine parts and castings to build steam or gas turbines
- Assemble and adjust farm machinery and deliver it to a farmer
- Operate a metalworking machine to shape premade parts of a surgical table
- Mount units of power sewing machines onto frames
- Fit together parts to make an internal combustion engine
- Assemble machine parts to make aircraft landing gear
- Cast metal into sheets and form metal pipes for pipe organs
- Make electrical cables for medical instruments
- Solder slide components of a trombone
- Assemble and adjust small firearm parts to meet specifications
- Clean mining machinery parts before assembly
- Position parts such as ribs, stringers, and seats to put together an aluminum boat

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies that make or repair:
 - . Agricultural equipment
 - . Aircraft
 - . Appliances
 - . Automobiles
 - . Engines and turbines
 - . Firearms
 - . Furniture
 - . Machine tools
 - . Medical instruments
 - . Musical instruments

6813 MACHINISTS

MACHINISTS shape pieces of metal into machine parts. They know how to set up and operate most types of machine tools used to make or repair metal parts for cars, machines, and other equipment. They also know about the working properties of metals used to make these parts. They plan and carry out all the operations needed to make a machined product. They work from blueprints and drawings to select tools and materials for the job and plan the cutting and finishing of parts.

SAMPLE WORK ACTIVITIES

- Follow blueprints to measure and mark silver, steel, or plastic so it can be machined into a tool
- Set up and operate lathes, drill presses, and grinders
- Treat metal parts with heat to make them stronger
- Use electronic gauges to check the sizes of machine parts
- Clean parts, before and after they are machined
- Spray worn parts with liquid aluminum or zinc to build them up
- Work with engineers to design and make new machine parts
- Take machinery apart and inspect its parts for needed repairs
- Work under contract as a MACHINIST'S APPRENTICE to learn the trade
- Use machine tools to make or repair timing devices for machines
- Fit and install springs, timing devices, and gears in machinery
- Spray enamel on completed parts to protect them
- Use bolts, screws, tweezers, wrenches, and screwdrivers to put together springs and dials
- Install electrical parts such as sockets and switches
- Use voltmeters to test assembled instruments
- Position work pieces in a vise or some other holding device so they can be machined
- Remodel and repair sound recording equipment used to make motion pictures

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories that use many machines for production work
- Auto manufacturers
- Electrical products manufacturers
- Transportation equipment manufacturers
- Fabricated metal products industries
- Railroad industries
- Chemical and food-processing industries
- Textile industries
- Federal government, especially in Navy yards and other installations
- Motion picture industries

6814 BOILERMAKERS

BOILERMAKERS put together, install, and repair boilers and related equipment and attachments. They lay out, cut, fit, and then bolt, weld, or rivet heavy metal plates, boiler tubes, and castings. Some repair sheet-metal sections of train engines. Others work on stationary boilers and tanks. They follow blueprints and use handtools, measuring devices, and portable power tools and equipment.

SAMPLE WORK ACTIVITIES

- Assemble and repair boilers, pressure vessels, tanks, and vats
- Use a straightedge, squares, transit, and measuring tape to locate and mark points on boilers where columns or plates go

- Attach rigging to lift parts of a boiler
- Line up water tubes and connect them to drums on the boiler
- Bolt or weld casing sections, stacks, chutes, and air heaters
- Install handholes, valves, and gauges in drums to complete water tube boilers
- Use a flame cutting device to repair old tanks
- Patch boiler insulation with cement
- Drill and tap holes to install studs
- Use a power wrench to tighten bolts on a boiler frame

HOURS OF WORK/TRAVEL

- BOILERMAKERS who work on train engines may be assigned to night and weekend shifts.

SAMPLE PLACES OF WORK

- Factories and plants that use boilers or tanks
- Electric utilities
- Independent boiler shops
- Railroad companies
- Shipyards

6816 PRECISION GRINDERS, FILERS, AND TOOL SHARPENERS

These people smooth, sharpen, or polish metal objects to precise finishes, using grinding machines. They study blueprints or job orders, select the proper grinding wheel, and mount the wheel on the machine. They also move controls and read dials to adjust the machine for depth of cut and stroke. They secure the workpiece in the machine, and then start the machine. As the machine operates, they release coolant on the wheel and workpiece. When pieces are finished, they measure them with precision devices.

SAMPLE WORK ACTIVITIES

- Operate grinding machines to:
 - . Grind printing cylinders to size
 - . Grind machine parts, dies, or tools
 - . Shape the outside surfaces of workpieces
 - . Grind wire teeth for a uniform length
 - . Form teeth on saw blades
 - . Sharpen scissors, hair clippers, and surgical instruments
 - . Remove defects in gun parts
- Use a chain hoist to dip metal pieces in a cleaning bath
- Study blueprints to determine the grinding to be done
- Move controls and read dials to set the angle of the workpiece in the machine
- Turn handwheels to bring the grinding wheel into contact with workpieces
- Regulate the pressure of the grinding roller
- Clean and oil machines

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories that produce metal products, transportation equipment, and machinery in large quantities
- Production departments, maintenance departments, and toolrooms in plants and factories
- Printing and publishing companies
- Machine shops

- Firearms manufacturers

6817 PATTERN MAKERS AND MODEL MAKERS (METAL)

These people make exact patterns and models of objects out of metal. They study blueprints or job orders and use their knowledge of math, product design, and metals to plan the layout of patterns. They measure, mark, and scribe the layout onto metal and mark the shape of each part with a pencil and pointed tool. They then machine the parts and nail, glue, screw, or solder them together. They use templates and other precision measuring devices to check the finished patterns.

SAMPLE WORK ACTIVITIES

- Design, lay out, construct, and assemble metal parts to make:
 - . Patterns used in foundry work
 - . Complete working models of new household appliances
 - . Landing gear for test models of aircraft
 - . Motor vehicle springs
 - . Production patterns for luggage hardware
 - . Experimental rocket engine parts
 - . Full-scale models of aircraft
 - . Tool, dies, molds, and other machine parts
- Compute the dimensions of parts to be cast or machined
- Use instruments, such as a compass, protractor, and rule to lay out pattern designs
- Set up and operate milling machines, lathes, drill presses, and grinders
- Assemble patterns, using handtools and fasteners
- Assemble mechanical and electrical parts and install wiring circuits
- Clean and hand finish workpieces, using an emery cloth, files, scrapers, and hand grinders
- Mark job numbers, file codes, and other information onto finished patterns
- Work as a METAL PATTERNMAKER APPRENTICE to learn the craft

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies that manufacture electrical equipment and parts
- Aircraft manufacturers
- Furniture manufacturers
- Machine tool and die manufacturers
- Companies that make metal castings or springs
- Foundries
- Hardware industries
- Companies that make measuring and weighing instruments
- Lighting fixture manufacturers

6821 LAY-OUT WORKERS (METAL)

These workers lay out, mark, and cut metal to make patterns or parts for metal products. They study blueprints, sketches, models, or work orders to plan layouts. They use math and their knowledge of products and processes to compute the dimensions of finished products. They use handtools, drafting instruments, and measuring devices to mark lines and spots on metal sheets where parts are to be cut, punched, drilled, or bent. They also may set out, line up, fit, and assemble metal parts to form products, molds, or forgings.

SAMPLE WORK ACTIVITIES

- Lay out items such as:

- . Metal castings, plates, or machine parts
 - . Center lines on propeller blade forgings
 - . Settings and stones for Jewelry pieces
 - . Watch parts
 - . Patterns for metal musical instrument parts
 - . Patterns used for engravings
 - . Metal structures for a ship's hull
- Lay out parts to show the location, dimensions, and tolerances required in processing them
 - Compute the dimensions of metal workpieces, based on the type of product, the processing to be done, and shop math
 - Study blueprints, sketches, and models to plan layouts
 - Examine workpieces and check their dimensions with a rule and straightedge
 - Use hands or a hoist to position workpieces on a surface plate
 - Check the position of workpieces, using precision gauges and dial indicators
 - Use punches and a hammer to mark layout points
 - Mark information such as dimensions, instructions, and part identifiers on workpieces
 - Use a microscope to machine small metal parts to size
 - Cut patterns, using drafting instruments and engraving tools
 - Build metal structures
 - Work as an APPRENTICE while learning to lay out and build metal structures of ships

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies that make aircraft and aircraft parts
- Clock and watch manufacturers
- Engraving companies
- Companies that make Jewelry or musical instruments
- Machine shops
- Ship and boat building and repair companies

6822 PRECISION HAND HOLDERS AND SHAPERS (JEWELERS)

These people make Jewelry and related products, such as watch parts, plaques, and silverware. Some specialize in making molds used to cast Jewelry items. They mold, shape, cast, or curve materials, such as metal, stone, glass, wood, or clay. They also may cut, saw, file, and polish articles, using handtools and polishing wheels. They may melt metals and pour them into molds to cast Jewelry parts. They may solder parts together to assemble or repair Jewelry items. They may mount stones in settings, or make original designs for Jewelry articles from wax. These workers use precision measuring devices and may use power tools, magnifiers, or other special Jewelers' equipment.

SAMPLE WORK ACTIVITIES

- Cast Jewelry pieces and ornamental figures for trophies and plaques from molten lead or zinc
- Melt zinc or lead alloy bars in a kettle
- Pour molten metal into a mold, using a hand ladle
- Work under contract as an APPRENTICE while learning to make Jewelry molds
- Cast metal molds to form Jewelry articles
- Form plaster molds of models
- Make and repair Jewelry articles, such as rings, bracelets, and locket
- Form models of articles from wax or metal, using curving tools
- Place a wax model in a casting ring, and pour plaster into the ring to form molds
- Place plaster molds in a furnace to melt the wax
- Cast metal models from plaster molds
- Form molds of sand or rubber from metal models

- Cut, saw, file, and polish articles, using handtools and a polishing wheel
- Solder pieces of jewelry together
- Enlarge or reduce the size of rings by sawing through the band and adding or removing metal
- Repair broken clasps, pins, rings, and other jewelry by soldering or replacing broken parts
- Use designs or instructions to reshape and restyle old jewelry
- Work under contract as an APPRENTICE while learning the JEWELER'S Job
- Make models by hand from plaster or wax according to prepared designs
- Art, carve, chisel, scrape, and file plaster or wax to make models for carving and engraving tools
- Assemble and repair silverware, such as coffee pots, tea sets, and trays
- Heat workpieces in an oven for a specified time to soften the metal for reworking
- Wire parts, such as leas and spouts, to the bodies of articles to prepare them for soldering
- Solder parts together and fill in holes and cracks with silver solder, using a gas torch
- Shape and straighten damaged leas, lids, and spouts with pliers
- Use hammers and punches to restore dented designs on articles
- Art designs in articles, using a hand drill and scroll saw
- Form chains of various shapes and designs from gold wire
- Wind wire into coils, using a coiling device
- Assemble links to form rope chains or fancy links, using pointed pliers
- Dip jewelry items into chemical baths to clean them
- Polish jewelry, using a jeweler's rouge and felt polishing wheel
- Beat gold strips into gold leaf, using hammers
- Lay out settings and mount stones in jewelry mountings
- Stamp designs in locket frames, using a drop press
- Tie or twist gold or silver wires together and bend them to form rings
- Set precious stones in rings, earrings, and other jeweled items
- Work under contract as an APPRENTICE while learning the STONE SETTER'S Job
- Set stones or jewels in watches, using a tweezers
- Use a binocular microscope to position stone watch parts
- Cut out parts for jewelry items, using a powersaw or handsaw
- Peel, shape, smooth, and polish pearls to remove surface defects, using a knife, grinding stone, and abrasives
- Make original designs for jewelry articles from wax
- Prepare jewelry design specifications and cost estimates
- Make glass beads and other jewelry parts, such as petals, and leaves
- Grind, drill, and finish jewel bearings used in precision instruments, such as compasses and meters

HOURS OF WORK/TRAVEL

- These workers generally have a standard 35-40 hour work week.

SAMPLE PLACES OF WORK

- Jewelry stores
- Companies that manufacture jewelry and related products, such as watches, silverware, plaques, and trophies
- Companies that make optical goods

6823 ENGRAVERS

ENGRAVERS put designs, letters, and images into surfaces of metal objects. They cut or burn these figures into metal, using etching or engraving tools and machines or acids. They may transfer photograph images onto metal plates. They may draw or prepare designs using tracing paper, paint, ink, and other materials. The objects they engrave range from dies, molds, and plates used to print designs on cloth and metal products to plates used in printing stamps, bonds, or money. Some engrave silverware, trophies, jewelry, or other objects.

SAMPLE WORK ACTIVITIES

- Follow sketches and blueprints to cut letters and designs on metal
- Compute the length and width of lettering and designs
- Use drawing tools to mark layout lines on a mold
- Use files, chisels, and a hammer to cut designs in metal

- Engrave lettering on eyeglass frames and jewelry
- Brush a chalklike powder on objects and sketch designs in the powder
- Etch designs on printing rollers that have been treated with acid
- Scratch charcoal into etched surfaces to make them stand out
- Dip a roller with a picture stamped on it into acid vats to burn the picture into the roller
- Expose film or glass negatives to bright light and transfer the photographs onto metal plates
- Stamp words, letters, and musical symbols on a metal plate used to print sheet music
- Carve designs into rollers used to print greeting cards
- Engrave letters on copper or steel printing plates

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies and businesses that engrave jewelry, trophies, gifts, silverware, or other metal objects
- Printing and publishing companies
- Firms that make items such as pens, pencils, hand stamps, seals, metal novelties, and nameplates
- Companies that make dies, plates, or molds used to print designs on products
- For yourself, as an independently employed ENGRAVER

6824 SHEET METAL WORKERS

These workers assemble, install and repair sheet metal products and equipment. They also cut, bend, and straighten metal sheets to form equipment parts or sections. They make items such as duct work, ventilators, furnace casings, and roofings. They use many different handtools and power machines, including shears, punch and drill presses, soldering and welding equipment, grinders, and buffers. They work from blueprints, and use precise measuring instruments to check their assemblies and installations.

SAMPLE WORK ACTIVITIES

- Select the type of sheet metal to use for a product based on knowledge of metals
- Mark off places on a metal sheet where it must be cut
- Set up and operate shears, bending rollers, and punch and drill presses to cut, bend, and join sheet metal parts
- Shape metal over anvils, blocks, or forms, using a hammer
- Use files and a portable grinder to smooth seams and joints
- Follow blueprints to install sheet metal equipment in a plant or business
- Use handtools and portable power tools to assemble sheet metal sections
- Check assemblies, using measuring instruments such as calipers, scales, and a micrometer
- Work in an APPRENTICESHIP program to learn the sheet metal craft

HOURS OF WORK/TRAVEL

- SHEET METAL WORKERS generally work more regularly than most construction trades, because most work is done indoors.

SAMPLE PLACES OF WORK

- Construction companies
- Contracting firms that specialize in heating, refrigeration, air conditioning, and air pollution equipment
- General contracting firms engaged in home, industrial, and commercial building
- Government agencies

- Businesses that do their own construction and alteration work
- For yourself, as an independently employed SHEET METAL WORKER

6829 PRECISION METAL WORKERS, MISCELLANEOUS

These workers shape and assemble metal parts in a very careful and exact manner. They make a variety of metal products, such as machine cutting tools, wire screens, furniture parts, and aircraft parts. Some rivet parts of ships or other structures. They follow work orders, drawings, diagrams, or product specifications. They use metalworking tools and machines and precision measuring devices. They may also operate ovens, furnaces, or hand torches to heat the metal before it is shaped.

SAMPLE WORK ACTIVITIES

- Make cutting tips for use on metalworking tools
 - . Use presses, furnaces, and grinding wheels
 - . Weigh powdered metals on a scale
 - . Compress powdered metals to form billets
 - . Cut and grind billets to form cutting tips for tools
 - . Use meters, gauges, and other measuring devices to check the dimensions of finished pieces
- Form wire screens used for draining racks and window guards, using a bench loom
 - . Measure and cut wire, using a ruler and wire cutters
 - . Press pedals to operate the loom
- Bend and straighten metal plates as specified by drawings, layouts, and templates
 - . Lay out reference points on workpieces, using a compass and radius bar
 - . Apply knowledge of geometry, effects of heat, and metals
 - . Heat metals, using a hand torch
 - . Lift and position workpieces on a machine table, using tongs or a hoist
 - . Bend workpieces by hammering them with a sledge or mallet
 - . Use a chipping hammer and grinder to chip, trim, and grind the edges of workpieces
- Dissolve parts of metal objects in an etching solution to make aircraft parts
 - . Mark areas to be etched, using templates
 - . Use a hoist to dip objects in an etching solution
 - . Rough finish the surfaces of parts, using abrasives and abrading handtools
- Erect metal tanks used to store crude oil
- Assemble metal products such as casements, doors, golf carts, or furniture
- Rivet structural parts of ships, using pneumatic tools
- Work under contract as an APPRENTICE while learning the WELDER-FITTER'S Job

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Plants or factories that produce
 - . Aircraft or aircraft parts
 - . Artificial flowers
 - . Furniture
 - . Fordings
 - . Metal springs
 - . Petroleum products
 - . Sports equipment
 - . Wirework
- Machine shops
- Airlines

- Ship building companies
- Welding shops

683 PRECISION WOODWORKERS

Workers in these occupations make or assemble wood products that are either complex or precisely detailed. They may make patterns that are used to form molds from which other products are made. They may build and repair wooden cabinets, high-grade furniture, or parts for wooden products. Some workers refinish damaged, worn, or used furniture. They remove old finish and apply new stain, varnish or paint. They then wax the furniture.

6831 PATTERN MAKERS AND MODEL MAKERS, WOOD

These workers lay out, cut, build, and fashion patterns used to form molds from which products can be cast. Some use wood to build full-sized or scale models of products. They work from blueprints to select wood stock, lay out the pattern, and saw each piece of wood to size. They use woodworking machines and many small handtools to shape rough pieces into final form. They assemble pattern segments by hand, using glue, screws, and nails. They carefully check each dimension with instruments, such as calipers and micrometers.

SAMPLE WORK ACTIVITIES

- Build templates and molds to be used as patterns and guides for building ship parts
- Lay out full-scale portions of a ship's plan, following blueprints
- Measure and mark cutting lines on sections of wood
- Plan, lay out, and build patterns used to form sand molds for casting products
- Use markings and measuring devices
- Fit and fasten parts together to form a pattern
- Use a plane, draw knife, and chisel to trim, smooth, and shape wood surfaces
- Paint surfaces in standard code colors to show how parts should be assembled
- Construct a precise scale model of a boat, car, or airplane
- Make full-scale models of home appliances out of wood
- Glue, nail, bolt, and screw wood parts to assemble models
- Construct plywood models of experimental airplane parts
- Build jigs (devices that hold work in position and guide tools acting upon the wood)
- Work in an APPRENTICESHIP program to learn the craft

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies that build and repair ships and boats
- Foundries
- Aircraft and aerospace industries
- Industries that use sand molds to make metal castings
- Companies that make wooden boxes
- Any company that makes wooden patterns or models of objects which will later be built

6832 CABINET MAKERS AND BENCH CARPENTERS

These skilled workers cut, shape, and put together the many different parts of complex or fancy wooden products. They may build and repair wooden cabinets and high-grade furniture, or make parts for wooden products such as doors, and window frames. They use woodworking machines and many types of handtools. They follow blueprints or drawings of articles to plan, cut, shape, and assemble wooden parts. They may stain, varnish, or paint finished products and install hardware such as hinges, catches, and drawer pulls.

SAMPLE WORK ACTIVITIES

- Study blueprints or drawings of articles to be built or repaired
- Mark the outline of parts on paper or lumber stock
- Match pieces of lumber, based on the color, grain (or pattern), and texture (or feel) of the wood
- Use a plane, chisel, and wood file to trim joints of articles
- Set up and operate woodworking machines such as power saws, jointers, and shapers
- Bore holes in wood to insert screws or dowels
- Glue, fit, and clamp parts together
- Nail fasteners in place to strengthen joints
- Sand and stain finished products
- Select, install, and adjust saw blades
- Use a grinder to sharpen cutting tools
- Work in an APPRENTICESHIP program to learn the craft

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Woodworking shops
- Carpentry shops that specialize in building or repairing cabinets, doors, window frames, or furniture
- Building contractors who construct, remodel, or repair buildings and structures
- For yourself, as an independently employed CABINET or BENCH CARPENTER

6835 FURNITURE FINISHERS

These workers refinish damaged, worn, or used furniture. Some also finish new furniture. They begin by taking the furniture apart or removing its knobs and hinges to prepare it for finishing. They remove old finish from surfaces, using steel wool, sandpaper, or solvent. They fill in cracks and nicks in surfaces with plastic or wood putty and then sand the surfaces to smooth them. They mix and apply coats of stain, varnish, or paint. Once the surfaces are dry, they polish and wax them.

SAMPLE WORK ACTIVITIES

- Take used furniture apart and put tape over surfaces not to be refinished
- Use handtools to remove knobs and hinges from furniture
- Apply a solvent to surfaces to remove old paint or stain
- Use a spatula or knife to fill nicks and cracks with wood putty
- Smooth surfaces, using sandpaper or a power sander
- Mix paint or stains to get the right color or shade to match existing finish
- Brush or spray coats of shellac or stain onto surfaces
- Use a sponge, brush, or comb to make stained surfaces appear to have a certain grain
- Use bleaching acid to restore wood to its natural color
- Work under contract as an APPRENTICE while learning the furniture finishing craft

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Furniture repair shops
- For yourself, as an independently-employed FURNITURE FINISHER

6839 MISCELLANEOUS PRECISION WOODWORKERS

These people carve and shape wood by hand and machine according to very exact patterns and measurements. They study blueprints, models, sketches, or customer orders to plan their work. They measure and mark wood stock to lay out the parts. They operate woodworking machines and use carpenter handtools to cut, shape, finish, and assemble the parts. They may also carve designs into the wood. They use scales, templates, gauges, and rules to check the dimensions of completed articles.

SAMPLE WORK ACTIVITIES

- Use woodworking tools and machines to:
 - . Finish, shape, and size hat blocks
 - . Construct accordions
 - . Make furniture parts
 - . Make wooden caskets
 - . Cut and shape boat oars
 - . Make skis
 - . Make smoking pipe stems from briar blocks
 - . Build and finish gunstocks
 - . Fashion wooden airplane and slider parts
 - . Construct and repair wooden molds
- Study sketches or customer orders to plan work
- Clamp wood blocks in a vise and shave and shape their tops with a spokeshave
- Measure and mark wood stock to lay out wood parts
- Cut and shape parts, rasps, and a sanding machine
- Smooth edges of cut pieces, using files, rasps, and a sanding machine
- Carve designs into wooden parts, using handtools and woodworking machines
 - . Assemble wood and metal parts with screws, nails, or glue
 - . Examine the fit and finish of completed articles

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies that make wooden airplanes and gliders
- Brick, tile, or concrete products manufacturers
- Gun-making companies
- Companies that make musical instruments
- Firms that build caskets
- Woodworking shops
- Wooden box manufacturers
- Businesses that make smoking pipes
- Sports equipment firms

684 PRECISION PRINTING OCCUPATIONS

These workers may set type or make engravings of photographs to be used to print books, magazines, and newspapers. Other workers bind books by folding sections in the proper order, then sewing or stapling them together. Some workers may help prepare or preserve printed material. They may make special mats or plates used in printing operations. Others may make filmed copies of printed material or restore and preserve documents for libraries and museums.

6841 PRECISION TYPESETTERS

These workers assemble and set type used to print newspapers, ads, and other materials. They may set type by hand and machine. To set type, they place each line of type, letter by letter, on a printer's stick. They select the place where words will be divided, and adjust the spacing of type with pieces of metal so that each line of type will be the right width. As each stick is filled, they slide the completed line into a shallow tray called a galley. They also proofread and correct type.

SAMPLE WORK ACTIVITIES

- Measure copy with a line gauge
- Set a printer's stick to the right length for a certain line of copy
- Select type to set based on size, style, and characters
- Arrange and set type according to copy
- Insert spacers between words or units
- Transfer type from a stick to a galley
- Insert leads or slugs between lines to adjust the length of a setup
- Prepare proof copies of type setups
- Check proofs for errors and correct the type when errors are found
- Print designs on paper used to etch glassware
- Work under contract as an APPRENTICE to learn the typesetting craft

HOURS OF WORK/TRAVEL

- TYPESETTERS may sometimes be required to work overtime to meet publication deadlines.
- Some TYPESETTERS regularly work evenings or night shifts.
- TYPESETTERS employed by newspapers may work holidays and weekends.

SAMPLE PLACES OF WORK

- Newspaper plants
- Commercial printing companies that print magazines and books
- Federal, state, and local governments
- Banks, insurance companies, advertising agencies, manufacturers, and other firms that do their own printing

6842 PRECISION LITHOGRAPHERS AND PHOTOENGRAVERS

These workers transfer or copy detailed designs or pictures onto metal plates to be printed. They photograph the picture or copy to be printed, develop the negatives, and prepare the metal plates used in printing. These workers use photographic equipment. They also use chemicals and acid solutions which are mixed using standard formulas. The work often requires the use of blueprints, drafting tools, and handtools.

SAMPLE WORK ACTIVITIES

- Mount negatives on a glass plate for use in preparing engraving plates
 - . Use a viewing table to check negatives for defects
 - . Pour a rubber solution over the base to toughen it
 - . Cut negatives to size, using a knife and straightedge
 - . Work under contract as an Apprentice while learning to prepare negatives for use in photoengraving work
- Transfer images to metal plates to make printing plates
 - . Use liquid formulas, a photocomposing machine, layout table, and measuring instruments
 - . Adjust machine controls to regulate speed, temperature, and exposure time
 - . Transfer images from negatives to printing plates
 - . Coat plates with chemicals, using a brush
 - . Mount negatives and printing plates in a camera
- Sketch cloth designs onto paper used to make printing rollers
 - . Use drafting tools and artists' work aids
 - . Lay out reference points on designs
 - . Sketch designs in color
- Touch up film to remove defects in designs
 - . Paint in lines and dots that were lost during processing
 - . Scratch out spots on images, using a knife and pin
- Etch metal plates used in photoengraving processes
 - . Mix acid solutions
 - . Brush protective solutions on the back and edges of the plates to protect them during the etching process
 - . Mount plates in an etching machine that sprays acid against the plate to etch (eat away) nonprotected areas
 - . Use a depth gauge to determine the depth of etchings
 - . Work under contract as an Apprentice while learning to etch or photoengrave printing
- Use a printing press to check engraving plates for defects

HOURS OF WORK/TRAVEL

- LITHOGRAPHERS and PHOTOENGRAVERS generally work a regular 8 hour day. However, they sometimes may have to work overtime to meet publication deadlines. Some work evenings or nights. PHOTOENGRAVERS employed by newspapers often work weekends and holidays.

SAMPLE PLACES OF WORK

- Commercial printing plants
- Newspapers
- Book and magazine printers
- U.S. Government printing plants
- Photoengraving shops
- Worker-owned shops

6844 BOOKBINDERS

Many printed items, such as books and magazines, must be folded, sewed, stapled, or bound after they leave the printing shops. Much of this work is done by BOOKBINDERS. These workers fold printed sheets into units, so that the pages will be in the right order. They insert any pictures that have been printed separately, then assemble pages in order and sew them together. They shape book bodies with presses and trimming machines and strengthen them with glued fabric strips. Machines are used for much of this work.

SAMPLE WORK ACTIVITIES

- Set up and operate a machine used to sew pages into book form for binding
- Thread a machine used to sew pages into books
- Place a book under a needle, set the presser foot to the thickness of the book, and turn screws to adjust the length of the stitch
- Sew books together
- Cut threads connecting books that have just been sewed and then stack the books
- Fold printed sheets to form sections and put the sections in numerical order
- Use a handpress to compress sections of books to the thickness needed
- Trim edges of books to size, using a handcutter
- Cut binder board to make bookcovers, using board shears
- Cut leather or cloth and glue it to the binder board
- Rebind damaged or worn books

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Bookbinding shops
- Book printing firms
- Commercial printing plants
- Large libraries
- Federal government, for example in the U.S. Government Printing Office

6849 PRECISION PRINTING OCCUPATIONS, MISCELLANEOUS

People in these jobs help prepare or preserve printed material. Some prepare special mats or plates used in printing operations. Some make filmed copies of printed material. Some restore and preserve documents for libraries and historical societies. These workers may use handtools, power tools, chemicals, and other materials.

SAMPLE WORK ACTIVITIES

- Prepare rubber printing plates used in printing containers
 - . Follow printing orders to lay out and draw the outline of a container on a mat
 - . Position and align printing plates, according to markings on a mat
 - . Fasten the plate on the mat, using glue and a staple gun
 - . Examine the first run of the printed container for printing defects
 - . Clean used plates with ink solvent and an airhose
 - . File plates according to printing order number
- Construct and finish electrotpe printing plates

- . Form a plastic mold of composed type, using fiber and a power press
 - . Spray the mold with a silver solution and then dip it in a plating tank
 - . Separate the mold from its plated shell and fill the shell with melted lead
 - . Remove excess metal from the edges and back of the plate, using power shears and milling machines
 - . Use a magnifier to examine the plate for defects
 - . Correct defects, using engravers' handtools, punches, and a hammer
 - . Work under contract as an Apprentice while learning to make printing plates
- Prepare copies of microfilm, using a contact printer and developing machine
 - . Cut rolls of exposed microfilm to specified lengths, using a paper cutter
 - . Line up the film strips to make a master print
 - . Insert the master print in a printer, set the timer, and start the printer
 - . Feed the prints into a developing machine to fix the image
 - Restore and preserve documents for libraries and historical societies
 - . Clean documents and test their ink to see if it will fade
 - . Bathe documents in baths to remove acid from the paper
 - . Flatten documents and seal them in acetate film to protect them

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Libraries, museums, and historical societies
- Paper products manufacturers
- Printing and publishing companies
- Private businesses, government agencies, and other places that do their own printing work

685 PRECISION TEXTILE, APPAREL, AND FURNISHINGS WORKERS

These workers design, make, maintain, or repair clothing and other sewn items that require precise workmanship. They may design, tailor, or alter suits or coats. They may make hats or leather goods such as shoes, luggage, or saddles. Some make slip covers or upholster furniture or car seats. Some clean, press, or dye clothing or fabrics, while others assemble tents or boat sails or set up patterns for fabrics.

6852 TAILORS AND DRESSMAKERS, HAND

TAILORS and DRESSMAKERS do difficult kinds of hand and machine sewing. Most are hired to make expensive clothing that needs precise shaping and finishing. Some make complete garments, but most specialize in a few operations, such as collar setting and lapel padding. These workers may design, make, alter, and/or fit tailored garments. They use sewing tools and equipment, measuring devices, and clothing patterns. Some develop designs for garments.

SAMPLE WORK ACTIVITIES

- Examine clothing to see if repairs are needed
- Use a razor blade to remove stitches from garments
- Shorten the sleeves on a suit or dress
- Replace worn pockets and linings on clothing
- Talk with customers to find out what type of material and garment style they want

- Develop designs for garments
- Outline patterns of garment parts on fabric
- Use scissors to cut out clothing patterns
- Use needle and thread to baste together parts of garments
- Fit basted garments on customers and mark areas on the garments that need to be altered
- Position and pin patterns for collars and sleeves on fabric
- Use a hand iron to press and smooth seams
- Cut extra material from seam edges, using shears or a knife
- Sew on buttons and make buttonholes to finish suits
- Work under contract as an APPRENTICE while learning the tailoring or dressmaking craft.

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Tailor shops
- Dressmaker shops
- Retail clothing stores
- Department stores
- Garment factories
- For yourself, as an individually employed TAILOR or DRESSMAKER

6853 UPHOLSTERERS

These workers make, repair, and replace upholstery used on furniture and inside vehicles to cover, cushion, and protect seats and other surfaces. They remove and replace worn and damaged fabrics, springs, and padding, make slip covers and other custom made coverings for surfaces. They use handtools, sewing machines, and measuring devices. They decide the types and amounts of materials needed and may order the materials. They may take apart furniture to repair or replace upholstery.

SAMPLE WORK ACTIVITIES

- Remove coverings, webbing, and padding from the seat, arms, back, and sides of a chair
- Remove broken springs by cutting coils or wires that hold them in place
- Measure and cut new covering material
- Upholster the inside of a hearse
- Repair seats and door panels in buses, trucks, and cars
- Sew covering material together, using a sewing machine
- Fit coverings to seat frames and tack and glue them down
- Rebuild upholstered furniture
- Use the shape of furniture as a guide to mark cutting lines on fabric
- Pin pieces of fabric together and fit them over furniture
- Figure out how much material will be needed to re-cover pieces of furniture
- Work under contract as an APPRENTICE to learn the upholstery craft

HOURS OF WORK/TRAVEL

- Self-employed UPHOLSTERERS arrange their own working schedules. Others typically work a standard 35-40 hour week.

SAMPLE PLACES OF WORK

- Upholstery shops
- Furniture stores
- Businesses, such as hotels, that maintain their own furniture

- Companies that specialize in doing upholstery work on cars, trucks, and other motor vehicles
- Automobile manufacturing companies
- Furniture manufacturing companies
- For yourself, as an independent UPHOLSTERER

6854 SHOEMAKERS AND LEATHER WORKERS AND REPAIRERS

These workers make, decorate and repair leather products such as luggage, shoes, and saddles. They use a variety of power-operated equipment, such as sole-stitchers, heel-nailing machines, and sewing machines. They also use many different handtools. Some specialize in making leather goods to order. Others decorate leather goods by cutting, stamping, or painting letters and designs on them. These workers may assemble entire products or make or repair particular parts of products.

SAMPLE WORK ACTIVITIES

- Sew rips in leather luggage by hand or machine
- Put new linings in luggage
- Replace locks, catches, straps, and buckles on hand luggage
- Make purses and wallets from leather, as instructed by customers
- Repair or refinish shoes
- Cut off the heel of a shoe with a knife
- Polish shoes by holding them against a buffing wheel
- Nail heel and toe cleats to shoes
- Cut, assemble, and join fabric and leather to make a saddle seat
- Cut, stamp, or paint lettering and designs on belts
- Use cement, nails and a stitching machine to join the covering of a saddle tree
- Sew ornaments onto a saddle
- Make shoes or boots for deformed feet, following a doctor's instructions
- Make a plaster cast of a foot
- Mark and punch out shoe eyelets
- Tack insoles in place in shoes
- Use a sewing machine to sew shoe parts together
- Cut out shoe parts with a knife and shears

HOURS OF WORK/TRAVEL

- Workers who make or repair leather goods in their own shops can set their own working hours.

SAMPLE PLACES OF WORK

- Shoe repair shops
- Shoe stores
- Department stores
- Drycleaning stores
- Shoe factories
- Businesses that make or repair luggage
- Harness-making shops
- Saddle-making shops
- Firms that manufacture or repair leather goods, such as billfolds, purses, belts, or trunks
- Home leather shops

6855 PRECISION LAUNDERING, CLEANING, AND DYEING OCCUPATIONS

These people clean, press, or dye garments and household fabrics. They handle difficult orders that require special attention and skill. For example, some use chemical solutions and steam to remove stubborn stains from fabrics. Some mix and apply dyes to color clothes, drapes, rugs, and other articles. Some specialize in drycleaning silk or other man-made garments that require special handling. These workers have to know the types of chemicals or dyes that can safely be used on different fabrics.

SAMPLE WORK ACTIVITIES

- Identify stains in wool, synthetic, and silk garments
- Decide what chemical solutions to use to remove stains, based on the type of fabric and the nature of the stain
- Sprinkle chemical solvents over stains
- Spray water, steam, or air over spots to flush out chemicals and dry garments
- Put bleach on spots to remove them
- Mix bleach with hot water in vats and soak material in the vats until they are white
- Dye clothes, drapes, or slipcovers in a kettle or dyeing machine
- Mix dyes and chemicals, according to a formula
- Test garments with chemicals to see what type of fabric they are made from
- Dip garments in a dye solution and stir them with a stick
- Dye curtains in a paddle-dyeing machine
- Dip rugs into a bleaching bath to remove their color before they are dyed
- Loop a rug around a reel that turns the rug in a dye bath
- Test the color of hosiery dye by comparing dyed hose with a master sample
- Press drycleaned garments, using a hot-head press, steam table, or hand iron
- Brush the pile (nap) on velvet garments with a handbrush

HOURS OF WORK/TRAVEL

- LAUNDRY AND DRYCLEANING WORKERS average about 35 hours a week on the job. In order to provide faster service to customers, some are required to work on Saturdays.

SAMPLE PLACES OF WORK

- Drycleaning shops
- Laundries
- Shops that specialize in dyeing clothes and household fabrics
- Hosiery mills
- Firms that specialize in renting and cleaning uniforms, towels, diapers, and other linens
- Valet shops

6856 APPAREL AND FABRIC PATTERNMAKERS

These workers construct patterns used in making textile products such as dresses, shoes, upholstery, hats, or similar items. Often they will sketch, trace, or draw patterns for parts and then mark the patterns and cut them out. Most use handtools such as screwdrivers, scissors, rules, and drafting tools. Some also use lathes or power tools to cut out and assemble patterns. Some workers adjust machines to knit fabric in a certain pattern. Some cast plaster patterns for hats.

SAMPLE WORK ACTIVITIES

- Set up knitting machines so that they will knit certain patterns
- Cover holes in a pattern plate with metal pieces to control the way knitting needles operate
- Sketch patterns for use in making furniture parts
- Trace the outline of a furniture part from a blueprint
- Cut out metal patterns with a lathe
- Use handtools to put together the sections of a pattern

- Use drafting tools to sketch a cartoon for an embroidery pattern
- Draw sets of patterns for garments of different sizes
- Draw sets of master patterns for parachutes or upholstery
- Use calipers, squares, rules, and pencils to draw outlines of parts on paper
- Draw details on parts to show the position of pleats, pockets, and buttonholes
- Use scissors and a knife to cut out patterns
- Draw designs on tracing paper and transfer them onto cloth
- Guide a pattern under the needle of a machine that makes holes to show pattern lines
- Cast plaster patterns used to make hats

HOURS OF WORK/TRAVEL

Some of these jobs may require shift work.

SAMPLE PLACES OF WORK

- Boot and shoe manufacturers
- Companies that manufacture textile goods (such as upholstery, parachutes, or other products) that require patterns
- Furniture manufacturing firms
- Garment factories
- Hat and cap manufacturers
- Knitting mills
- Retail stores that specialize in making custom-made embroidery patterns for customers

6859 PRECISION APPAREL AND FABRIC WORKERS, MISCELLANEOUS

These workers do precision work with clothing and fabrics. Some design, repair, and alter costumes worn by performers. Some tan and dress fur garments. Some assemble pattern chains used to control the pattern of fabrics woven on looms. Some lay out and assemble items such as boat sails or tents. Some reweave damaged sections of costly rugs. Some custom-make items such as hats or car convertible tops. These workers use hand-sewing tools, patterns, and measuring devices. They also may use sewing machines, handtools, and gauges.

SAMPLE WORK ACTIVITIES

- Select and fit costumes for cast members in movie or TV productions
- Make minor alterations and repairs to costumes
- Design unusual costumes
- Tan and dress pelts (furs) to improve their beauty
- Prepare tanning and washing solutions according to formulas
- Use a shaving knife to remove coarse hairs from pelts
- Assemble pattern chains that control the movement of parts in a weaving loom
- Thread yarn through needles to prepare a knitting machine for knitting
- Make reed assemblies for textile machines, using machines, handtools, and gauges
- Design surgical belts and supports
- Lay out canvas or plastic materials and assemble them into sails, tents, or awnings
- Work under contract as an APPRENTICE while learning to make canvas products
- Draw patterns of sails, following design plans
- Fit and alter garments, such as sirdles and corsets,
- Replace linings, hat bands, and ribbons on cleaned hats
- Reweave damaged areas of rugs, following the color, pattern, and weave of the rugs
- Weave threads of fabric articles to repair holes, tears, or worn places
- Design, make, and repair fur garments
- Make hats to customer order
- Make lampshades from material, such as silk
- Assemble and install custom-made car tops
- Sew beads to leather items, such as belts and purses

HOURS OF WORK/TRAVEL

- These jobs generally involve a standard 35-40 hour work week. Some jobs may require shift work.

SAMPLE PLACES OF WORK

- Knitting mills
- Garment factories
- Ship and boat building firms
- Companies that make camping supplies, such as tents, sleeping bags, and backpacks
- Furniture companies
- Shops that make leather products, such as purses, belts, and moccasins
- Airplane manufacturers
- Textile mills
- Lamp shade manufacturers
- Companies that make products such as fishing nets or hammocks
- Furriers
- Movie and TV studios

686 PRECISION WORKERS: ASSORTED MATERIALS

These workers produce products that require skill and exactness. They may mold, carve, or shape products by hand as they make musical instruments, blow glass, or make molds. Others cut diamonds and other gems. Some grind optical glass for telescopes or glasses. They may make dental products such as dentures, paint decorations on dinnerware, or process and develop film. They may assemble electrical or electronics products, mix paints, or make novelty items.

6861 PRECISION HAND MOLDERS AND SHAPERS (EXCEPT JEWELERS)

These people mold, shape, or carve materials by hand. They also may lay out and assemble parts to form products. They follow work orders, diagrams, or patterns to shape parts from materials such as metal, stone, glass, wood, or clay. Some shape molds from sand and then fill the molds with molten metal to make parts products. Some pour concrete into molds to cast structures. Some shape, fit, and assemble parts of musical instruments or sports equipment. These workers use precision measuring devices, handtools, and may use power tools.

SAMPLE WORK ACTIVITIES

- Cast tools used to stamp parts from sheet metal
 - . Operate a hoist to position the machine tools for work
 - . Clamp metal and plywood strips around dies to form molds
 - . Shape the molds with sand
 - . Pour molten metal into the empty molds
 - . Force bolts into the molten metal to form bolt holes
 - . Work under contract as an Apprentice while learning to make molds for metal products
- Mold optical glass into various shaped blanks
 - . Read work orders to determine the type and amount of optical glass to be molded
 - . Change machine tools and adjust machine settings
 - . Press glass pieces with paddles to shape them
- Cast a concrete mixture in a mold to form structural panels
- Repair and refinish tire molds
- Shape and fit parts to make or repair musical instruments
- Shape and finish woods, plastics, and metals to make archery bows
- Cast putty into designs used to decorate picture moldings
- Carve designs and figures into stone

- Work under contract as an APPRENTICE HAND STONECUTTER while learning the craft
- Cut, shape, and finish rough blocks of building stone according to diagrams or patterns
- Heat and bend glass tubes to form parts for neon signs
- Shape gobs of molten glass into glassware by blowing through a blowpipe
- Mold plastic clay into vases, urns, and pitchers, using a revolving potter's wheel
- Make scale models of objects, using clay, metal, wood, or other materials

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories, plants, or shops that produce products such as:
 - . Aircraft and aircraft parts
 - . Concrete products
 - . Glass products
 - . Jewelry
 - . Machine tools and accessories
 - . Mirrors and pictures frames
 - . Musical instruments
 - . Optical goods
 - . Pottery and porcelain
 - . Signs
 - . Sporting goods
 - . Stonework
- Foundries

6862 PRECISION PATTERNMAKERS, LAY-OUT WORKERS, AND CUTTERS

These workers make patterns or models to be used as guides for making products or parts. They lay out or sketch designs and patterns. They may cut, shape, and assemble materials to form products or models. They often work from blueprints and sketches and use measuring devices, machines, and handtools. Some design and build models of items, such as pottery, aircraft, or movie sets. Some make patterns, or molds used to form parts of products. Some design and build custom-made products, such as sports equipment or stained glass windows.

SAMPLE WORK ACTIVITIES

- Make patterns, molds, or models for use in items such as:
 - . Envelopes
 - . Aircraft parts
 - . Stone products
 - . Neon signs
 - . Pottery
 - . Concrete products
 - . Brick or tile products
 - . Floor coverings
- Design and build items such as:
 - . Full-scale mockups of aircraft
 - . Prototypes of toys
 - . Customized skis
 - . Displays and exhibits
 - . Plaster maps
 - . Miniature models of movie sets
 - . Stained glass windows
- Draw patterns for products
- Compute the size, number, and types of materials needed to fill orders
- Sketch the layout and dimensions products, using measuring and drawing instruments
- Select the machines and tools to be used in producing products
- Build forms or fixtures from or plastic
- Examine blueprints of items to be built
- Cut and shape material, using power saws, planers, and routers
- Bolt, glue, or screw completed parts together
- Use rules and meters to check the dimensions of finished parts
- Lay out and cut patterns
- Make scaled drawings of products
- Make molds for casting products
- Work under contract as a PATTERNMAKER'S APPRENTICE while learning the craft

HOURS OF WORK/TRAVEL

- These people may work anywhere from small shops to large factories. Work hour requirements may vary from setting to setting. Some jobs may require shift work.

SAMPLE PLACES OF WORK

- Factories, plants, or shops that make products such as:
 - . Aircraft and aircraft parts
 - . Envelopes
 - . Floor coverings
 - . Hearing aids
 - . Plastic products
 - . Shipping containers
 - . Signs
 - . Sporting goods
 - . Stone monuments, statues, or grave markers
 - . Textile products
 - . Toys
- Printing and publishing companies
- Advertising agencies
- Movie and TV studios
- Mapmaking firms
- Glaziers' shops

6863 DETAIL DESIGN PAINTERS AND DECORATORS

These workers carve, print, draw, or engrave designs and decorations on objects. They work with a variety of products. For example, some engrave rubber stamps or paint designs on dinnerware. Some make tabletop insets from colored glass. Some restore or touch up photographs. Some paint faces on dolls. Some do fancy lettering for diplomas and awards. Some cut out letters to make signs for outdoor ads. They may use a variety of tools and materials, including paints, handtools, measuring devices, and machinery.

SAMPLE WORK ACTIVITIES

- Paint designs on glassware, and vases, following a pattern
- Paint plastic flowers and leaves for use in fake bouquets
- Draw gold line around cups and plates, using a brush
- Cover the surfaces of books, furniture, harps, or other items with gold leaf to decorate them
- Carve designs on plastic products using an electric hand drill
- Print lettering or designs on tile, using a silk-screen process
- Engrave monograms, coats of arms, and other designs on glassware, using stone wheels
- Cut, shape, and set blocks of colored glass, or marble for use as table tops or wall panels
- Trace lettering and designs on marble stones to prepare stones for cutting
- Restore damaged and faded photographs, using an airbrush
- Prepare drawings of products for use in ads
- Design and prepare office forms according to customer order
- Paint faces on mannequins (store dummies), using artists' tools
- Prepare ad layouts, according to customer order
- Paint designs on objects, such as pottery and lampshades
- Design and paint signs
- Copy music symbols onto sheet music
- Letter formal documents, such as diplomas and charters
- Draw precise lettering for use in books, or other printed materials
- Draw cartoon characters, using paints and brushes
- Work under contract as an APPRENTICE while learning to correct color negatives used in preparing printing plates
- Prepare page layouts of type and sketches for use in newspaper or magazines
- Work under contract as an APPRENTICE while learning to prepare and arrange copy for printing

HOURS OF WORK/TRAVEL

- Some of these jobs may offer opportunities for part-time or temporary work.
- Some jobs may require shift work or overtime work.

SAMPLE PLACES OF WORK

- Companies that make products such as:

- . Artificial flowers
- . Brick and tile products
- . Dinnerware
- . Glassware
- . Models and patterns
- . Music books and sheets
- . Pens and pencils
- . Plastic products
- . Pottery and porcelain
- . Signs
- . Statues and art works

- Construction companies
- Movie and TV studios
- Photofinishing plants
- Shops that specialize in doing fancy lettering or preparing custom-made products
- Printing and publishing companies
- Newspapers
- Advertising agencies

6864 OPTICAL GOODS WORKERS

These workers make eyeglasses, contact lenses, and other optical devices. They work from detailed instructions to cut, grind, polish, and lay out lenses. They assemble products such as telescopes, sunsights, glass eyes, and eyeglasses. Some workers assemble complete products. Others specialize in a particular operation, such as coating, polishing, cutting or mounting lenses. These workers use precision handtools and measuring instruments. Many also use machines such as special lathes, polishers, and grinders.

SAMPLE WORK ACTIVITIES

- Read blueprints and work orders to see how to put together a telescope or sun sight
- Use math formulas to figure out distances
- Blow glass into the shape of globes to make false eyes
- Fit plastic eyes into a customer's eye socket, using precision handtools
- Paint artificial eyes so that they will look like real eyes.
- Follow a prescription to design and fit lenses and frames for eye glasses
- Assemble molds for casting contact lenses
- Use handtools to mount eyeglass lenses in metal or plastic frames
- Set up and operate machines to grind eyeglass lenses
- Locate and mark the center and other critical points on lenses
- Operate a jeweler's lathe to cut curves into contact lens blanks
- Control equipment that is used to coat optical elements with chemical or metal film so they will reflect light
- Lay out and cut optical glass which will be molded into lenses
- Weigh glass, using a scale or machine
- Hand polish lenses to remove defects
- Work under contract as an APPRENTICE while learning to make optical goods

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Ophthalmic laboratories
- Retail stores that sell optical devices
- Eyedoctors' and optometrists' offices
- Opticians' shops
- Companies that make or repair telescopes, sun sights, or similar optical elements

6865 DENTAL LABORATORY TECHNICIANS

These workers make dentures (false teeth), crowns, and inlays used to restore people's teeth. They also make bridges of metal and porcelain used to replace missing teeth, and special devices used to straighten teeth. They work from written instructions from DENTISTS and impressions made of patients' teeth and mouths. Beginners usually mix and pour plaster into casts and molds and do other simple tasks. Experienced workers do the more difficult lab work, such as making crowns, or plaster molds for dentures. These workers use hand instruments, as well as special lathes and drills, high heat furnaces, and other lab equipment.

SAMPLE WORK ACTIVITIES

- Follow a prescription to mix porcelain paste to the color of natural teeth
- Use brushes and a spatula to apply porcelain paste over a metal framework to make teeth
- Place dentures in an oven to harden
- Use power tools and handtools to repair retainers for teeth
- Grind and polish wire frames
- Weld or solder wire joints
- Position false teeth in a wax model
- Cast plaster models of dentures to be repaired
- Make gold bands used for straightening teeth
- Use hand shears to cut gold insets to certain sizes
- Shape, grind, polish, carve, and put together metal tooth bands
- Work under contract as an APPRENTICE while learning the craft.

HOURS OF WORK/TRAVEL

Generally, DENTAL LABORATORY TECHNICIANS work 35-40 hours per week, during regular office hours.

SAMPLE PLACES OF WORK

- Commercial dental laboratories
- Dentists' offices
- Federal Government, especially in the Veterans Administration hospitals and clinics and in the Armed Forces
- Firms that manufacture dental materials and equipment

6866 GEM AND DIAMOND WORKING OCCUPATIONS

People in these jobs cut, shape, polish, split, and select diamonds and other precious stones for use in jewelry, watches, cutting tools, and other items. Their jobs require a high degree of skill and care. They use precision measuring instruments, machines, and handtools to shape and finish stones. For example, they may cut rough stones into shapes for ring mountings or grind jewels to make watch bearings or tips for phonograph needles. Some prepare diamonds for use in machine dies or industrial cutting tools.

SAMPLE WORK ACTIVITIES

- Polish diamonds, using a table-mounted polishing plate
- Mix diamond dust and oil to make a paste used in cutting and polishing diamonds
- Cut diamonds into different shapes by pressing their surfaces against a spinning plate
- Use a bench lathe to saw diamonds
- Press rough diamonds into cement so they will not move while they are being cut
- Use a magnifying glass to study the grade, quality, and color of diamonds before sorting them
- Weigh diamonds on a special weighing scale
- Cut, shape, and polish precious gems
- Position rough stones (gems) in a holder to prepare them for cutting and shaping
- Hold out gems against a shaping wheel to shape them
- Make small cuts into gems along premarked lines

- Place a steel blade in a cut on a diamond and tap the blade with a jeweler's hammer to split the stone
- Drill very small holes in industrial diamonds, using a drill, a lathe, and handtools
- Grind jewels to shape jewel bearings used in watches

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Businesses that make or repair clocks and watches
- Companies that make cutting tools and other machine tools and accessories
- Companies that make phonograph needles
- Jewelry stores and shops

6867 PRECISION ELECTRICAL AND ELECTRONIC EQUIPMENT ASSEMBLERS

These workers follow blueprints and wiring diagrams to put together electrical or electronic equipment parts and products. The equipment they assemble includes, for example, electric control units, telegraph equipment, heating elements, and electric organs. They use test meters, precision measuring instruments, and a variety of handtools and power equipment to do their work.

SAMPLE WORK ACTIVITIES

- Read diagrams and work orders to see what materials and equipment workers will need to make circuit boards
- Put together parts of an electric organ
- Install panels and switches, according to blueprints, wiring diagrams, and sketches
- Sketch wiring diagrams for instrument panels
- Use saws, drill presses, engraving machines, rulers, tape measurers, and scales to make jig boards
- Use mirrors to see how to connect color-coded wires located in a compact area
- Cut, strip, bend, and form wire cable and tubing
- Assemble electric-motor control units, such as starters, switches, and relays
- Use handtools and power tools to install voltage controls on a panel
- Use a drill press to drill mounting holes in a panel
- Use an ohmmeter and voltmeter to test electrical circuits
- Use handtools and a soldering iron to wire telegraph equipment
- Set up and operate a machine to coil wire used in heating elements
- Wind tape around wire coils to insulate them

HOURS OF WORK/TRAVEL

- Generally, these workers have a standard 35-40 hour work week.

SAMPLE PLACES OF WORK

- Telephone and telegraph companies
- Companies that manufacture telephone, telegraph, and radio equipment
- Aircraft manufacturers
- Factories that make electric organs
- Industrial equipment manufacturers
- Electrical appliance manufacturers
- Companies that make or repair electronic calculators, computers, and related equipment

6868 PHOTOGRAPHIC PROCESS WORKERS

These workers process photographic film and prints. They do such things as expose, develop, print, and finish photographs. Some specialize in a certain process, such as retouching negatives or tinting or copying photos. The equipment they use may include cameras, printers, and enlargers. They also may use chemical solutions, timers, paper cutters, artist tools, and small handtools.

SAMPLE WORK ACTIVITIES

- Read work orders to determine the processes and materials needed to copy prints
- Develop exposed negatives
- Mount a camera on a tripod or stand and load the camera with film
- Set camera controls to regulate film exposure time
- Compute the amount of time motion picture film should be exposed
- Make enlarged or reduced prints from negatives, using a projection printer
- Retouch negatives, using pencils or watercolors and brushes
- Apply oil colors to photos of people or places
- Trim prints, using scissors or a paper cutter
- Examine prints under a viewing light to detect dusts, spots, or uneven margins
- Use photographic equipment and handtools to prepare stencils used in silk screen printing
- Position film on layout sheets used in printing magazines or book pages
- Duplicate printed material on paper, cloth, or film
- Set up and operate a photostat machine to copy printed material, such as manuscripts

HOURS OF WORK/TRAVEL

- Most PHOTOGRAPHIC PROCESS WORKERS work a 40-hour week. In labs that specialize in processing film for amateur photographers, employees may work overtime during peak seasons such as summer and after major holidays.

SAMPLE PLACES OF WORK

- Advertising agencies
- Businesses that do their own photography work
- Magazine publishers
- Manufacturers
- Military services
- Photofinishing labs
- Portrait and commercial studios

6869 MISCELLANEOUS PRECISION WORKERS, N.E.C.

These workers follow detailed instructions to make or process products or materials. The products they may work with include: food flavorings, paints, medical equipment, photographic plates, TV tubes, and novelty items. Generally, they work from formulas, blueprints, diagrams, or other sets of instructions. They may use handtools, machines, and test equipment.

SAMPLE WORK ACTIVITIES

- Follow formulas to prepare flavorings used in food products
- Develop formulas for dyes
- Operate machines to mix pigments and oils used to color fake leather
- Prepare fuel elements for use in nuclear reactors
- Fill, shape, seal, and mark glass tubes to make thermometers
- Build models of medical equipment, such as heart stimulators
- Make medical devices, such as braces, surgical supports and fake limbs
- Assemble and adjust movie cameras and projectors
- Prepare photographic plates used to print patterns on steel
- Make control devices for turbines

- Rebuild TV tubes
- Make dice from precut cubes, using a milling machine
- Mold and assemble parts to make rubber handstamps
- Assemble and test rocket engine parts
- Assemble and test optical devices
- Make wigs out of fake hair
- Make novelty items from sea shells, cloth scraps, and pine needles
- Build specially designed rubber footwear, such as boots and slippers
- Build and test electrical parts used on motorcycles
- Build structures used in firing missiles according to blueprints and engineering notes
- Install lab and hospital equipment, using carpentry and plumbing tools

HOURS OF WORK/TRAVEL

These people work in a variety of industries. Work hour and travel requirements may vary from job to job and from industry to industry. Many plant jobs require shift work.

SAMPLE PLACES OF WORK

- Companies that produce or process products such as:
 - . Aircraft and aircraft parts
 - . Chemicals
 - . Coated fabrics
 - . Electrical equipment
 - . Electronics products
 - . Fabricated metals
 - . Farm equipment
 - . Flavoring extracts and syrups
 - . Instruments and appliances
 - . Leather goods
 - . Machine tools and accessories
 - . Medical devices
 - . Musical instruments
 - . Novelties
 - . Paint and varnish
 - . Paper goods
 - . Pens and pencils
 - . Plastic goods
 - . Rubber goods
 - . Toys and games
 - . Wigs and hair pieces

687 PRECISION FOOD PRODUCTION OCCUPATIONS

These workers follow recipes, procedures, or other instructions to prepare food. They may work as bakers, making breads, cakes, and pies. Others may specialize in pastries or cake decorating. Some make large batches of food, such as cheese, candy, or gum, while others make things to order, such as ice cream specialties or custom blends of tobacco. Other workers cut meat for restaurants, stores, meat packing firms, and slaughter houses.

6871 BUTCHERS AND MEAT CUTTERS

BUTCHERS and MEAT CUTTERS cut meat into sections using knives, saws, slicers, and power cutters. Some work in restaurants and other eating places. They cut, trim, and bone sections of meat to make roasts, steaks, chops, and grindings meat. Others work in slaughter houses or meat packing firms. They kill, skin, and cut up animals such as cattle, sheep, and hogs. They also may trim, sort, and wash the internal organs of animals.

SAMPLE WORK ACTIVITIES

- Cut, trim, and bone animal sections to make cooking cuts such as roasts, steaks, chops, and stew cubes
- Use a meat saw, knives, and an electric grinder to prepare meats for cooking
- Cut and weigh steaks and chops for single servings
- Shape and tie roasts
- Kill cattle, calves, and sheep as directed by Jewish law
- Sharpen knives on a whetstone
- Cut the throat of an animal held by other workers

- Reach into the body of a calf to check its lungs for sores or growths
- Tie a cow's hind legs so it can be lifted for slaughter or skinning
- Cut animals' veins to drain their blood so that they will die more quickly
- Slit open animals and trim their carcasses (bodies)
- Cut animals into sections and sort out parts that can be eaten
- Work under contract as an APPRENTICE while learning the meat-cutting trade

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Restaurants, hotels, hospitals, and other places where large amounts of meat are prepared and served
- Slaughter houses
- Meat-packing companies
- Retail food stores

6872 BAKERS

BAKERS mix and bake ingredients according to recipes to make large amounts of bread and other baked goods. They measure and mix flour, sugar, shortening, and other ingredients to prepare batters, doughs, fillings, and icings. They roll, cut, and shape dough to form sweet rolls, pie crusts, tarts, and cookies. They place dough in pans, molds, or on sheets and bake it in an oven or on a grill. They may put toppings on baked goods. Some BAKERS specialize in a certain product such as bread or pies. Others bake bread to test flour.

SAMPLE WORK ACTIVITIES

- Use a scale or specially marked container to measure ingredients such as flour, sugar, and shortening
- Read and follow recipe instructions
- Mix flour, shortening, and other ingredients in a mixing machine bowl
- Roll, cut, and shape dough to make pie crust or cookies
- Place cookie dough on sheets and bake it in an oven
- Watch the color of products being baked and adjust the oven temperature when necessary
- Use a spatula or brush to ice or glaze baked products
- Develop new recipes for cakes and icings
- Compare bread baked with a test flour to bread baked with a standard flour
- Weigh loaves of bread and record their weights
- Work under contract as an APPRENTICE while learning the baking trade

HOURS OF WORK/TRAVEL

- Because many bakeries operate around the clock, BAKERS may have to work night shifts or on weekends.

SAMPLE PLACES OF WORK

- Bakeries
- Grain companies

6873 BATCHMAKERS (CANDYMAKERS, CHEESEMAKERS, ETC.)

BATCHMAKERS prepare large amounts (or large batches) of candy, cheese, honey, or other foods used in products such as candy bars, gum, and processed cheese or honey. They follow recipes or formulas to mix, cook, and prepare ingredients to make these food items. They may create new recipes for food products. BATCHMAKERS use many different kinds of cooking tools and equipment. They may tend large machines that process foods. They may direct other workers.

SAMPLE WORK ACTIVITIES

- Mix almonds with a sugar solution to make candy centers
- Dump ingredients into large cookers
- Move batches of cooked candy to a water-cooled kettle
- Operate a refining machine to smooth the texture of candy fillings
- Follow or make up a recipe to make candies that have a certain flavor or color
- Use molds or a machine to cast candy into different shapes
- Knead candy by hand
- Examine, feel, and taste candy to see if it was made correctly
- Direct CANDY-MAKER HELPERS
- Follow a formula to cook milk and other ingredients to make cheese
- Adjust steam valves on cheese-making equipment
- Direct workers to mold, cut, or press cheese into certain shapes
- Compare samples of honey with a standard sample for color and smell
- Figure out the amount of different types of honey to mix together to make products that have the same color
- Work under contract as an APPRENTICE while learning the batchmaking trade

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Candy factories or plants
- Food processing centers
- Dairies that make cheese products
- Cheese-making plants
- Firms that prepare honey for sale
- Any manufacturing plant that prepares large batches of ingredients to make food products

6879 PRECISION FOOD WORKERS, MISCELLANEOUS

These people follow recipes or other precise directions to prepare foods or related products. For example, some decorate cakes and other pastries. Some mold and decorate ice cream. Some cook foods to be canned, and then test them to make sure they are completely cooked. Some prepare special blends of tobacco to customer order. These workers use precision devices, such as meters, weighing and measuring tools, and formulas or recipes.

SAMPLE WORK ACTIVITIES

- Decorate cakes and pastries with designs, using an icing bag or handmade paper cone
 - Cut and shape cakes, using a knife
 - Spread icings on cakes, using a spatula
 - Tint icings with food coloring and
 - Pour it into icing bags
 - Squeeze icings from bags to write words or form flowers or other designs
- Mold and decorate ice cream, according to order

- . Pack ice cream into molds shaped as flowers, fruit, or animals
 - . Press mold halves together and place them in a hardening cabinet
 - . Dip hardened molds in water, to remove the shaped ice cream
 - . Whip cream, sugar, and dye by hand or in a machine beater to make colored whipped cream
 - . Create leaves or flowers, or other designs out of whipped cream
 - . Place plastic, paper, or metal decorations on ice cream
- Cook fruits, vegetables, or meats to be canned
- . Weigh or measure ingredients, according to a recipe
 - . Load foods into a large kettle or pressure cooker
 - . Watch thermometers and gauges
 - . Stir foods being cooked to prevent them from scorching
 - . Test food samples with special meters to see if they are completely cooked
 - . Test foods for sugar content
- Blend various kinds of tobacco to customer order
- . Use a formula to blend tobaccos for sale in a store
 - . Pour tobacco into a mixing box and remove sticks and off-colored grains
 - . Knead tobacco to blend it
 - . Spray tobacco with oils, cloves, or other spices
 - . Pour blends into cans and seal the cans
 - . Record the method of packing and the contents of tobacco cans

HOURS OF WORK/TRAVEL

- Some of these jobs involve work at a bakery plant. As many bakeries operate around the clock, workers may be required to work night shifts and weekends.

SAMPLE PLACES OF WORK

- Bakery shops and plants
- Dairies and ice cream shops
- Tobacco shops
- Food processing plants
- Canneries

688 PRECISION INSPECTORS, TESTERS, AND RELATED WORKERS

These workers use precision tools to measure, test, inspect, and adjust products, instruments, and equipment. They may inspect products for defects, wear, or other problems. They may assemble and adjust precision instruments such as scales, gun sights, or switches in control devices. They may adjust and repair items or products, using handtools, precision instruments, and testing devices. They may work from blueprints or sketches.

6881 PRECISION INSPECTORS, TESTERS, AND GRADERS

These people inspect and test parts, products, and equipment, and then record or report their findings. They look for defects, wear, and other problems with equipment or products and, in some cases, grade parts or products. Most of these workers use precision measuring instruments, complex test equipment, and handtools. Some also adjust and repair faulty equipment used in production work. These workers are found in many settings, and their specific work duties vary.

SAMPLE WORK ACTIVITIES

- Read blueprints to get information needed to inspect machined workpieces
- Test cars' exhaust systems
- Inspect and test typewriters to see if they meet specifications
- Bake and test samples of premixed cakes, biscuits, and pancakes
- Test plastic tubes and rods to see how hard they are
- Use scales, gauges, calipers, and micrometers to check the weight and dimensions of products
- Examine metal and glass parts of instruments for surface scratches and nicks
- Use watchmaker's tools to inspect watch parts
- Test electronic equipment to find out why it is not working properly
- Use voltmeters to check the capacity of dry-cell batteries
- Inspect and repair pinball and other game machines
- Mark a check-off list for each item on a new car that has been inspected
- Test fire a rocket engine and interpret the results of the test
- Inspect a telegraph central office to see what new equipment should be installed
- Test heating and air-conditioning equipment

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Machine shops and foundries
- Iron and steel mills
- Automobile and auto parts assembly plants
- Airplane and aircraft factories
- Railroad companies
- Factories that make or repair typewriters
- Businesses that make or repair photography equipment
- Watch and clock factories
- Sports equipment factories
- Shops that make or repair musical instruments
- Companies that make or repair heating and cooling systems
- Any business that must check delicate or complex products or equipment for defects

6882 PRECISION ADJUSTERS AND CALIBRATORS

These workers assemble and adjust precision instruments such as scales, time pieces, gun sights, and control devices. For example, some test, and adjust weighing scales and other devices to make sure they are accurate. Some repair or assemble watch or clock parts. Some attach sights to guns. Some adjust or repair electrical relays and switches. They often work from blueprints or sketches and may test, repair, replace, clean, or adjust parts. They use precision measuring devices, and tools and may use soldering equipment, magnifiers, or grinders.

SAMPLE WORK ACTIVITIES

- Adjust weighing scales, using handtools and test equipment
 - . Adjust scales to insure their balance and accuracy
 - . Read dial indicators to check the accuracy of scales
 - . Take apart, examine and repair clocks
 - . Adjust and tighten parts
 - . Install chime control devices in clocks, following blueprints and sketches
 - . Bolt casings that house clock units to the back of clockcases
 - . Install switches in clocks
 - . Assemble clock parts, such as dials, hands, and contact springs
- Use watchmakers' tools to assemble and adjust watch parts

- . Use a Jeweler's loupe (magnifying glass) to examine watch parts for defects
- . Oil and grease bushings and other surfaces
- . Clean parts such as plates, mainsprings, barrels, and hands
- . Change timing weights on balance wheels to correct watch's timing
- . Cut out watch dial blanks
- . Solder holding feet to watch dials
- . Brush, buff, and polish watch dials, using abrasive wheels
- . Plate dials with silver, gold or other metals
- . Print designs, numbers, and names on watch dials
- . Inspect complete dials for dirt and scratches
- Adjust parts of electrical relays and switches
- Attach telescopic sights to shotguns and rifles

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies that make or repair watches and clocks
- Factories or shops that make or repair pistols, rifles, and shotguns
- Factories that make weighing scales
- Electrical and electronic equipment manufacturers

69 PLANT AND SYSTEM OPERATORS

These workers operate and maintain equipment and machinery that provides power for industrial operations as well as for heating, cooling, and ventilating buildings. Some workers operate equipment or systems used to generate and distribute electrical power. They may assemble, adjust, or repair equipment. They observe equipment operations and keep records. They may run boilers, turbines, generators, pumps, condensers, or motors.

691 WATER AND SEWAGE TREATMENT PLANT OPERATORS

These people operate equipment in water or sewage treatment plants to remove harmful waste from water or to make wastewater harmless. They operate pumps, pipes, valves, and processing equipment to move wastewater from sewage pipes through various treatment processes. They read and interpret meters and gauges to be sure equipment is working properly. They also operate chemical-feeding devices, test water samples, and keep records of their work. They use common handtools and special tools to repair and adjust plant equipment.

SAMPLE WORK ACTIVITIES

- Turn valves, pull levers, and move switches to control pumps that move water into a treatment plant
- Read flowmeters and gauges to see how much waste water to process
- Check equipment for defects such as pump leaks or worn bearings
- Use handtools to repair plant equipment
- Record the amount of power used in treating water
- Dump chlorine, lime, and other chemicals into water
- Turn valves to control the flow of water through filter beds used to remove impurities
- Reverse the flow of water to clean tanks and filter beds
- Use meters to test water samples for acids or impurities
- Check panelboard readings to see if waste chemicals are safe
- Start and stop pumps, engines, and generators to control the flow of raw sewage
- Test waste to see if it is radioactive
- Control the temperature in tanks that process sludge (muddy waste)
- Clean equipment in a sewage disposal plant

HOURS OF WORK/TRAVEL

- Water and sewage treatment plants operate around the clock. PLANT OPERATORS are often required to work night shifts.
- During emergencies, overtime work in these jobs is common.
- Many PLANT OPERATORS in small towns are employed part-time or handle additional duties.

SAMPLE PLACES OF WORK

- City and county water and sewage treatment plants
- Private industries (including chemical and textile plants) that process their own wastewater
- Federal installations that process their own wastewater

692 GAS PLANT OPERATORS

GAS PLANT OPERATORS adjust and control equipment used to process and distribute natural gas. They turn valves to adjust the flow of natural gas through scrubbers that remove harmful gases and water. They also control compressors and cooling units that turn gas to liquid form and move it to storage tanks. Some control the flow of gas into distribution lines that service homes and businesses. These workers use test equipment, handtools, and measuring devices. They also keep daily records of gauge and meter readings.

SAMPLE WORK ACTIVITIES

- Control equipment to liquify and compress gas
- Determine how much gas customers are expected to need, based on weather and other information
- Adjust equipment to control the temperature, pressure, level, and flow rate of gas in a cooling system
- Use test equipment to determine the amounts of certain chemicals in gases
- Record test results, meter readings, and work done onto logsheets
- Turn valves to adjust the flow of gas through scrubbers that remove harmful materials
- Adjust controls of equipment used to move liquid gas from storage tanks to distribution lines
- Signal workers who tend pumps and cooling towers
- Use handtools to repair equipment

HOURS OF WORK/TRAVEL

- Most workers in natural gas processing plant work 8 hours a day, 5 days a week. Some workers may be assigned shifts.

SAMPLE PLACES OF WORK

- Gas companies
- Light, heat, and power companies

693 POWER PLANT OPERATORS

These workers operate equipment that produces power for machinery, heating and ventilating systems, and various kinds of electrical power systems. They control motors, generators, pumps, diesel engines, condensers, and turbines. They may assemble, adjust, maintain, and repair machinery. They watch power-generating machinery in operation, watch safety controls, and check meters and gauges. They record instrument and meter readings.

6931 STATIONARY ENGINEERS

STATIONARY ENGINEERS operate and maintain the machinery that provides power for industry and heating, cooling, and ventilation in factories and other buildings. This machinery includes steam boilers, diesel engines, turbines, generators, pumps, and condensers. They start and stop equipment, watch meters and gauges, and adjust equipment when necessary. They also carefully watch over machinery safety controls and keep records of meter readings. They often use hand or power tools to make minor repairs to machinery.

SAMPLE WORK ACTIVITIES

- Open valves on pumps and condensers
- Record temperature, pressure, and other meter readings on a logsheet
- Add chemicals to a cooling system to lower the temperature
- Inspect equipment to see if repairs are needed
- Use a torch to light gas or oil burners
- Turn valves and adjust controls to set fuel feed openings
- Tighten fittings on equipment
- Compute the amount of dampness in the air, using a hydrometer
- Adjust controls to regulate the airflow through ventilation pipes
- Work under contract as an APPRENTICE while learning the trade

HOURS OF WORK/TRAVEL

- STATIONARY ENGINEERS usually work a 5-day, 40-hour week.
- In plants that operate around the clock, STATIONARY ENGINEERS may be assigned to any one of three shifts -often on a rotating basis -and to Sunday and holiday work.

SAMPLE PLACES OF WORK

- Power stations
- Factories
- Sewage and water-treatment plants
- Office and apartment buildings
- Hotels
- Hospitals
- Any large industry or business

6932 POWER PLANT SYSTEMS OPERATORS, EXCEPT STATIONARY ENGINEERS

These people operate equipment used to generate and distribute electrical power. They control motors, generators, pumps, and other equipment that furnish power for machinery or for electric power systems. They also may assemble, repair, adjust, and maintain the equipment. They read gauges and other dial indicators and operate control panel switches to regulate the flow of power. They also keep records of instrument readings and power system operations. Some supervise or direct other power plant workers.

SAMPLE WORK ACTIVITIES

- Operate a gas or diesel engine to supply power for oil well drilling machinery
 - . Assemble pumps and other drilling equipment
 - . Loosen and tighten sections of drill pipe
 - . Oil, grease, and repair machinery
- Coordinate the activities of workers who operate generating stations to produce and distribute electricity
 - . Calculate load estimates based on weather and public demands
 - . Watch a control board that shows the operating condition of electric power lines and equipment
 - . Direct workers to make adjustments to equipment as conditions require
 - . Contact other power systems to arrange power exchanges
 - . Compile records of operations
- Control and maintain equipment that supplies water, fuel, and power for turbines
 - . Read gauges to see that units are operating properly
 - . Collect oil, water, and other samples for lab tests
 - . Tighten leaky pipe joints
- Control a nuclear reactor that produces steam to generate electric power
 - . Start up and shut down the reactor, as required
 - . Help prepare nuclear fuel elements for shipment
 - . Control circuit breakers that regulate the flow of electric power to consumers
 - . Determine the number of generators required to meet service demands
 - . Issue orders to open, close, and tag electric circuits
- Operate equipment used to furnish power for telephone operations in a central office
- Work under contract as an APPRENTICE POWER SUBSTATION OPERATOR

HOURS OF WORK/TRAVEL

- Many power generating stations operate 24 hours a day, 7 days a week. Therefore, some powerplant employees must work nights and weekends, usually on rotating shifts.

SAMPLE PLACES OF WORK

- Light, heat, and power companies
- Petroleum production plants
- Chemical plants
- Telephone and telegraph companies

694 CHEMICAL PLANT OPERATORS

These workers operate equipment to process chemicals. They set controls on automatic equipment to regulate the temperature, pressure, and amounts of materials used, as chemicals are processed. They read instruments that measure pressure, flow of materials, and other information. They use instruments to test chemicals and may send chemical samples to a lab for testing. They keep records of instrument readings and test results and report equipment breakdowns.

SAMPLE WORK ACTIVITIES

- Control the temperature of chemical baths used in making aluminum
- Break off sample pieces of crust formed on chemical baths and grind them into a powder for testing
- Drop chemicals into product samples to see if the samples change color
- Use a meter to measure the current flow between two electrical connections
- Watch panel lights and listen for warning signals that indicate problems
- Move controls that affect the speed of chemical reactions
- Request that workers repair or adjust equipment
- Inspect equipment for hazards, leaks, or other conditions that would cause a plant shutdown
- Record instrument readings in a log book
- Shut down equipment during emergencies
- Control the flow of oil, steam, air and chemicals to a tower
- Weigh samples of products, before and after heating them, to measure water loss
- Operate stills, pumps, and other equipment used to refine ammonia
- Test chemical products for waste
- Tend machines used to make drug products, such as creams and ointments
- Patrol a work area to check the level of carbon in tanks

HOURS OF WORK/TRAVEL

- Because chemical plants usually operate around the clock -three shifts a day, 7 days a week - processing workers often work the second and third shift, (generally for extra pay). Shift assignments are usually rotated, so a person may work days one week and nights the next.

SAMPLE PLACES OF WORK

- Industrial chemical plants
- Ore dressing, smelting, and refining plants
- Plants that manufacture soap
- Companies that make coke products
- Companies that produce plastic materials
- Firms that manufacture drug preparations and related products
- Companies that manufacture animal charcoal, carbon black, or lamp black

695 PETROLEUM PLANT OPERATORS

PETROLEUM PLANT OPERATORS are responsible for one or more processing units in a petroleum plant. They control the temperature, pressure, and flow of oil in the units. They watch instrument panels that show the entire operation of all processing units in the plant, and maintain and operate pumps that control production. They measure the amount of oil in storage trucks before and after deliveries. They also test oil samples for water or other impurities, and check the flow rate of oil into or out of the tanks.

SAMPLE WORK ACTIVITIES

- Control the operation of oil refining units that produce products such as gas and fuel oil
- Read processing schedules, operating logs, and test results of oil samples to decide whether to change equipment controls
- Move and set controls, such as knobs, valves, switches, and levers, to control the processing of oil
- Read temperature and pressure gauges and record the readings
- Watch for warning signals, such as lights or the sounding of horns, to detect problems with equipment
- Inspect equipment for leaks or faulty valves
- Control pumps to start and direct the flow of oil products
- Record the types and amounts of oil products processed
- Plan the movement of petroleum products through lines to processing, storage and shipping units
- Turn handwheels to open and close pipelines and tankcase valves
- Grease valves and pumps

- Use wrenches to tighten pipe connections
- Lower a thermometer into a tank of oil to get a temperature reading
- Load barges and tank cars with petroleum products
- Measure (or gauge) the amount of oil in storage tanks before and after deliveries
- Test oil samples to see if they contain water or foreign materials
- Check gauges to determine the flow rate of oil into or out of tanks

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Petroleum plants
- Petroleum refineries
- Oil pipeline companies

696 PLANT OR SYSTEM OPERATORS, MISCELLANEOUS

These people control equipment used to process products, such as chemicals, concrete and asphalt, glass, lime, steel, water, or coal. They generally work at a control board where they watch gauges, dials, and machine operations. They adjust panel controls to regulate machine processes. They also watch for signals that indicate processing stages or problems. They may patrol work areas to observe materials being processed or to collect samples for testing. They may help adjust and maintain the equipment. They also record meter readings and may keep production records.

SAMPLE WORK ACTIVITIES

- Control evaporators, furnaces, and dissolving tanks to recover sodium from chemicals used in making paper
 - Patrol areas around recovery units
 - Check recording devices and indicators on panelboards
 - Turn controls to regulate pressure and temperature
 - Use testing devices to check solutions at various stages of processing
 - Record meter readings onto progress charts
- Operate a concrete or asphalt plant to process materials used in construction
 - Move controls on a control board to heat, dry, and mix ingredients
 - Watch gauges, dials, and machine operations to make sure that processing standards are being met
- Control automatic equipment to weigh, mix, and melt ingredients to make glass
 - Adjust panel control to move silica, sand, and clay from storage bins to a mixer
 - Adjust controls to dump blended mix into a furnace
 - Watch signal lights, dials, and charts
 - Turn switches to adjust air, fuel, water pressure, and furnace temperatures
 - Observe the color of molten glass to determine when the furnace has reached the proper temperature
 - Collect samples of molten glass for lab tests
- Control equipment used to produce lime
- Control equipment to treat and charge battery cells
- Control equipment used to reduce steel into products of specified sizes and shapes
- Unload and store nuclear fuel elements at a chemical plant
- Operate equipment to crush coal and mix it with water to be moved through pipelines
- Operate equipment used to blend, wash, and size rock, sand, or ore to prepare it for further processing

- Tend high pressure boilers that supply heat or power for engines and turbines
- Control equipment to regulate the waterflow in reservoirs

HOURS OF WORK/TRAVEL

- Many processing plants operate around the clock, 7 days a week. PLANT or SYSTEM OPERATORS may at times have to work evening or night shifts. They also may have to work during weekends and on holidays.

SAMPLE PLACES OF WORK

- Paper and pulp mills
- Concrete manufacturers
- Glass manufacturers
- Lime manufacturers
- Electrical equipment manufacturers
- Iron and steel mills
- Chemical plants
- Fuel pipelines
- Salt processing plants
- Construction companies
- Mining and quarrying companies
- Ore dressing, smelting, and refining plants
- Waterworks

7099 PRODUCTION WORKING OCCUPATIONS

These workers produce manufactured goods. They may set up and/or operate machines that mold, shape, or assemble articles made of metal, wood, glass, plastic, or fibers. They may perform such jobs as welding or assembly operations by hand or machine. They may run knitting machines, wood lathes, printing presses, or electroplating machines. Other workers inspect or test products, expedite work, or sort and grade products.

71 SUPERVISORS; PRODUCTION OCCUPATIONS

These people supervise workers who set up, operate, and tend machines in factories, plants, or businesses. They may also supervise workers involved in hand production work. They study production schedules and determine the workers, equipment, assign duties, and materials needed to meet them. They interpret company policies and job orders to workers, and help solve difficult work problems. They inspect work for quality, and may hire, train, and discharge workers. They may also keep workers and production records.

SAMPLE WORK ACTIVITIES

- Study production charts, manuals, and customer specifications
- Plan production methods
- Assign tasks to workers, prepare timecards and supply, production, and personnel reports
- Instruct workers on machine setups
- Instruct workers in new procedures
- Direct workers in production operations
- Oversee the operation of machinery
- Receive daily reports of the amounts and types of materials to be moved or processed
- Inspect equipment and schedule necessary maintenance
- Inspect material during and after processing
- Order supplies and equipment
- Talk with company officials to develop new products and resolve customer complaints
- Supervise workers who do such things as:
 - . Test materials and products
 - . Clean and polish articles
 - . Cast metal products
 - . Prepare bakery products
 - . Process food products
 - . Process coal or other minerals
 - . Process fertilizers or chemicals
 - . Refine salt or sugar
 - . Treat wood products with fireproofing chemicals
 - . Apply glaze to ovenware
 - . Make cement
 - . Make playground equipment
 - . Copy printed matter such as books and maps
 - . Make products from wood
 - . Assemble products
 - . Pack containers

HOURS OF WORK/TRAVEL

- PRODUCTION WORKER SUPERVISORS work in a variety of places, including factories, warehouses, private businesses, and shops. Work hours vary from industry to industry. Some of these jobs may require shift work or evenings, night, and weekend work.

SAMPLE PLACES OF WORK

- Manufacturing firms, including those that produce:
 - . Aircraft
 - . Cement products
 - . Chemicals and chemical products
 - . Explosives
 - . Food
 - . Natural gas
 - . Paint
 - . Photographic equipment
 - . Steel products
 - . Textiles
 - . Tobacco
 - . Windows
 - . Wood products
- Government agencies

- Retail and wholesale businesses

73-74 MACHINE SETUP OPERATORS

These workers set up and operate machines that make or process various kinds of products. They may set up textile machines that knit, weave, or treat fabrics. Others may set up machines that perform printing or woodworking operations. Some are responsible for metal or plastic processing or fabricating machines. Operators read work orders, install attachments, adjust settings, and may control operations. They examine work, clean and oil machines, and replace worn parts.

731-2 METALWORKING AND PLASTIC WORKING MACHINE SETUP OPERATORS

These workers set up and operate machines that process metal and plastic. They may set up machines that shape products by extruding or molding processes. Others may be responsible for machines that fit parts together, weld metal, or electroplate objects. Workers read work orders, install machine attachments, adjust settings, and may control machine operations. They examine finished workpieces, clean and oil machines, and replace broken or worn parts.

7312 LATHE AND TURNING MACHINE SETUP OPERATORS

These workers set up and operate lathes and other machines to shape parts from metal workpieces. They read blueprints and layout sheets to determine the machine tools and settings required. They use handtools to install the required machine attachments, and then lift or hoist a workpiece onto the machine. They carefully check the position of the workpiece and then move a control to feed the machine cutting tool along its surfaces. They also release coolant on the tool and workpiece as the machine operates.

SAMPLE WORK ACTIVITIES

- Set up and/or operate one or more machines to:
 - . Bore and thread metal wire
 - . Make parts for clocks
 - . Make machine tool or die parts
- Study blueprints and layout sheets to determine the machining to be done
- Select the cutting speeds, feed rates, depth of cuts, and cutting tools to be used
- Use handtools to install machine tools and holding devices
- Operate machines for trial runs to test the setup
- Lift workpieces by hand or with a hoist and position them in a machine
- Use measuring devices, such as gauges and calipers, to check the position of workpieces in the machine
- Turn handwheels to feed a machine cutter along workpieces
- Turn a valve handle to release coolant on machine tools and workpieces
- Measure finished workpieces
- Replace worn machine tools
- Sharpen tools with a bench grinder

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories that produce metal products, transportation equipment, or machinery in large quantities
- Production departments, maintenance departments, and toolrooms of factories and plants

7313 MILLING AND PLANING MACHINE SETUP OPERATORS

These people set up and operate machines to shape metal workpieces into items, such as molds, tool and die parts, and car and aircraft parts. They follow blueprints or work orders to determine the operations required. They select, install, and adjust machine attachments, such as cams, templates, and cutters. They move controls to position tools against the workpieces or to feed the workpieces through the machine cutter. They start the machines, watch them operate, and make adjustments when necessary. They may use gauges or other devices to measure finished pieces.

SAMPLE WORK ACTIVITIES

- Follow spoken directions to select machine cams and templates to be used in setting up machines
- Compute the dimensions of shapes to be milled and the sequence of cutters to be used, using shop math
- Mount different cutting tools in the spindle of a machine, using handtools
- Set machine stops to control the depth of the cutter stroke
- Position workpieces on the machine by hand or with a hoist
- Move controls to position tools in relation to the workpiece
- Control the cutting action of a machine, by watching and feeling the machine tool as it shapes the workpiece
- Turn a valve handle to start the flow of coolant or a lubricant on the work area, before starting the machine

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories that manufacture metal products, transportation equipment, and machinery
- Plant production departments, maintenance departments, and toolrooms
- Machine shops
- Clock and watch manufacturers

7314 PUNCHING AND SHEARING MACHINE SETUP OPERATORS

These people set up and operate machines that cut, shape, and punch holes in metal workpieces. They follow blueprints or work orders to install and adjust cutting dies, blades, and other machine attachments. They test and adjust machine feeds, stops, and guides. They position workpieces in the machines and start the machines. They also may take machines apart to remove defective parts or units. They use handtools, and may use measuring devices to check the dimensions of finished pieces.

SAMPLE WORK ACTIVITIES

- Study blueprints to determine the operations required to mill workpieces
- Select the feed rate, cutting speed, depth of cut, and cutters needed to work specific pieces

- Install and align machine cutters
- Set the feeder to operate in time with the machine cutting speed, using gauges and handtools
- Test and adjust the feed mechanism
- Set machine stops, guides, and blade pressure, using wrenches and a template
- Lay out cutting lines on metal stock, using a ruler and square
- Lift and position workpieces on a machine table, by hand or using a hoist
- Use clamps, bolts, or holding devices to secure workpieces on a machine table
- Use measuring instruments to check the alignment of workpieces before they are milled
- Turn hand wheels to feed workpieces through the machine cutter
- Watch machines operate and make adjustments of them when necessary
- Check the dimensions of milled workpieces, using gauges and other precision measuring devices
- Determine why machines are not working properly
- Take machines apart and remove defective parts, using handtools and power tools
- Hone cutters to remove nicks
- Clean machine spacers and cutters, as required
- Set up and operate one or more machines to:

- . Mill machine, tool, or die parts
- . Cut template sheets to size
- . Cut metal stock, as directed on work cards
- . Shear structural shapes from metal

- . Punch and notch metal workpieces
- . Trim, shape, or crimp metal stock
- . Cut metal into strips of specified lengths
- . Make duplicate airplane or car parts

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies that make tin products
- Iron or steel mills
- Machine shops
- Sheet metal shops
- Manufacturing plants

7315 EXTRUDING AND DRAWING MACHINE SETUP OPERATORS

These workers set up and operate machines that force plastic, rubber, or hot metal through a die to form rods, tubes, and similar shaped products. They install dies, screws, and sizing rings in the machines, and connect hoses that provide steam, water, air, or oil to the die. They load the machines with the material to be processed, and set controls to regulate air pressure, sizing rings, and temperature. They check finished products for defects and may measure them or test them with an acid bath or impact tester.

SAMPLE WORK ACTIVITIES

- Use handtools to install machine attachments
- Weigh materials and mix them according to a formula
- Fill machine hoppers with materials
- Set machine controls to make products of specific sizes
- Adjust the speed at which material is fed into a cutter
- Examine finished articles for defects, such as wrinkles, bubbles, or splits
- Measure finished articles, using micrometers and gauges
- Test products with an acid-bath tester, burst tester, and impact tester
- Draw wire through a series of dies to reduce its dimensions

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Iron and steel mills
- Plastic goods manufacturers
- Rubber goods manufacturers
- Synthetic fiber plants
- Wire manufacturers

7316 ROLLING MACHINE SETUP OPERATORS

These people set up and operate machines that move pieces of metal between rollers to press them to a desired thickness, shape, or finish. They follow job orders to determine how machines should be set up. They select, install, and adjust machine attachments and regulate the speed at which the machine operates. They inspect finished workpieces for defects, and may use gauges and meters to measure the metal pieces.

SAMPLE WORK ACTIVITIES

- Read mill schedules to determine the size of product to be produced
- Set up a machine to form, bend, roll, or emboss designs in sheet metal
- Bolt tools onto machine spindles
- Align machine dies
- Adjust controls to set the speed of the machine
- Set and adjust bolts to position machine units
- Install and adjust equipment, such as rolls, guides, shears, and coilers
- Watch steel passing through machine rolls to see if it is of the correct straightness, flatness, and finish
- Catch metal as it leaves lead rolls, using hand tongs
- Use gauges and meters to check the dimensions of machined pieces
- Sort and store used tools
- Operate a tin roller to reduce steel slabs to strips and sheets

HOURS OF WORK/TRAVEL

- Workers in these jobs may be required to work on shifts or on weekends.

SAMPLE PLACES OF WORK

- Aluminum processing plants
- Companies that manufacture metal springs
- Iron and steel processing plants
- Machine shops

7317 PRESS AND BRAKE MACHINE SETUP OPERATORS

These workers set up and operate power presses and brakes used to bend, form, and stretch metal. They select and install dies (devices for cutting or forming metal). They also adjust the machine ram or punch (devices used for crushing, driving, or forcing). They follow blueprints to shape metal workpieces into products or parts. They use measuring devices, handtools, and other devices (such as a hand sledges, crane, or torch) to set up the machines, position workpieces, and form and finish products.

SAMPLE WORK ACTIVITIES

- Set up and operate a heavy-duty power press to bend, form, stretch, and straighten metal plates
 - . Follow blueprints and use templates to bend, cut, and shape metal
 - . Use a tape and rule to measure workpieces
 - . Select special purpose dies and position them in the machine
 - . Bolt dies to the bed of the machine, using wrenches
 - . Use a torch to heat workpieces before they are shaped
 - . Use a crane and sleds to position a workpiece between the dies of a machine press
 - . Use a hand sleds and anvil to hand form or finish workpieces
- Set up and operate a power brake to bend, notch, punch, or straighten sheet metal
 - . Turn screws to set the pressure of the machine ram
 - . Push a pedal to operate the ram to bend metal
- Set up an automatic machine that presses lead slugs into bullets
 - . Use handtools and gauges to change the length and rate of a machine punch and scratches
 - . Check finished products for nicks
 - . Weigh samples of bullets on a scale to see if they meet weight standards

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Button and belt manufacturers
- Companies that make bullets and other types of ammunition
- Companies that use large amounts of metal sheets, forgings, plates, or other metal parts in their operations or products

7318 DRILLING AND BORING MACHINE SETUP OPERATORS

These workers set up and operate machines that drill holes in metal parts. They study job orders or blueprints to determine the machine required, tools to be used, and order in which tasks should be done. They lift workpieces onto the machine by hand or with a hoist, and then position and fasten them. They adjust the machine for cutting speed and feed rate, and mount the required cutting tools in the machine. They start the machine and read gauges and dials to check each workpiece as it is processed. They also use precision measuring devices to check the finished pieces.

SAMPLE WORK ACTIVITIES

- Hoist workpieces onto a machine table
- Position workpieces on a table and secure them with bolts, clamps, or other devices
- Use special tools to check the reference lines on workpieces
- Turn a handwheel to adjust the machine table
- Set machine cutting speeds, feed rates, and cutting tools
- Install machine tools
- Turn a valve handle to direct a coolant or cutting oil against a tool and workpiece

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories that produce metal products
- Transportation equipment manufacturers
- Machinery manufacturers
- Tool manufacturers
- Machine shops

7319 FORGING MACHINE SETUP OPERATORS

These people set up and operate machines that press and roll hot or cold metals into various shapes. They follow blueprints or work orders to set up the machines. They use handtools and measuring devices to install and adjust the required machine attachments and set the machine guides. They position heated or cold metal stock on the machine to be forced through machine tools and shaped into metal products or parts. They may use gauges to check the dimensions of forged pieces.

SAMPLE WORK ACTIVITIES

- Set up and/or operate one or more machines to:
 - . Forge stock metal parts from hot metal
 - . Expand the ends of metal bar stock
 - . Cold forge BB shots for air rifles
 - . Shear, form and punch nut blanks from hot or cold metal
 - . Forge boat spikes from heated metal spikes
- Inform a worker who heats metal of the required amount and temperature of workpieces to be forged
- Follow blueprints and work orders to set up forging machines for other workers to operate
- Plan work procedures to form experimental parts
- Pull stock from a furnace when it reaches the right color
- Bolt dies to the ram of the machine, using handtools and measuring devices
- Use handtools to align machine parts
- Turn setscrews and stop nuts to adjust the cutoff tool, ram stroke, and feeder arm
- Thread wire through rollers and feeding units
- Position workpieces on the die machine
- Turn knobs to control the speed of a conveyor that brings heated stock from a furnace to the machine
- Move workpieces through a series of machine tools to obtain finer detail
- Watch machines operate to detect problems
- Use set gauges to check the dimensions of forged pieces

HOURS OF WORK/TRAVEL

These jobs may require shift work.

SAMPLE PLACES OF WORK

- Forge shops
- Plants that use forgings in their final products, such as:
 - . Ammunitions factories
 - . Automobile manufacturing plants
 - . Farm equipment manufacturing plants
 - . Handtool manufacturing plants
 - . Nut and bolt factories

7322 GRINDING, ABRADING, BUFFING, AND POLISHING MACHINE SETUP OPERATORS

These workers set up and operate machines that grind, smooth, polish, and sharpen metal objects. They may work with one machine or set up a line of machines for others to operate. They follow blueprints or job orders to prepare the machines for operation. They use handtools and precision gauges to install and adjust machine units. They may operate machines to test the setup or to process products or parts. They move controls to regulate the machine action. They check finished parts for defects and may train new workers to use the machines.

SAMPLE WORK ACTIVITIES

- Set up and operate one or more machines to:
 - . Grind precision cutting tools and dies
 - . Grind threads on gears and leadscrews
 - . Grind holes in machine parts
 - . Hone bearings and connecting rods
 - . Smooth the edges of watch parts
 - . Shape and sharpen cutting tools
 - . Buff silver-plated bowls and tea sets
 - . Polish gun parts
 - . Notch tools so they can be identified
- Plan and lay out work, following blueprints and work orders
- Select and install grinding wheels, gears, and cams
- Compute machine settings
- Use precision measuring devices to adjust machine attachments
- Move controls and read dials to set the grinding speed and feed rate of a machine
- Position and tighten machine stops, using a wrench
- Lift workpieces onto a machine by hand or by using a hoist
- Position workpieces on the machines
- Direct coolant over cutting areas as parts are being ground
- Measure workpieces with precision gauges
- Instruct new workers in machine operations
- Set up a buffing line to buff auto trim to a specified finish
- Set up honing machines for other workers
- Operate machines to see if they meet customer orders
- Set up machines to make abrasive wheels and belts
- Set up machines to grind and polish lens blanks

HOURS OF WORK/TRAVEL

- Many factories and plants operate on 8-hour shift schedules. Workers in these jobs may at times have to work during weekends, evenings or night shifts.

SAMPLE PLACES OF WORK

- Factories and plants, including those that produce:
 - . Abrasive and polishing products
 - . Clocks and watches
 - . Cutlery and tools
 - . Machinery
 - . Metal products
 - . Optical goods
 - . Silverware
 - . Transportation equipment
- Machine shops, maintenance departments, and toolrooms

7324 LAPPING AND HONING MACHINE SETUP OPERATORS

These workers set up and operate machines to lap or hone metal parts. They follow blueprints or instructions to prepare the machines for work. They position and clamp workpieces on the machine, using handtools. They move controls to set the machine speed, pressure, and cycle time. They brush or spray a lapping compound on the workpiece, start the machine, and adjust machine controls as required. When work is complete, they check finished parts for defects.

SAMPLE WORK ACTIVITIES

- Set up and operate a machine used to lap gears
 - Read blueprints or instructions to determine gear dimensions, the number of gears to be lapped, and the machine set up required
 - Position the gears on the machine, using a fixture and wrenches
 - Move controls to set the spindle angles, lapping speed, tool pressure, and length of cycle
 - Brush or spray a lapping compound on the gears
 - Start the machine and adjust the action of the gears as required
 - Check lapped gears for defects

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories that produce metal products, transportation equipment, and machinery
- Production departments, maintenance departments, and toolrooms in factories and plants

7326 NUMERICAL CONTROL MACHINE SETUP OPERATORS

These workers set up and operate machines that can be programmed to cut and shape workpieces automatically. They read job orders or blueprints, select the correct program for the work to be done, and install the required tools. They may lift workpieces onto the machine, using their hands or a hoist. When they finish workpieces, they stop the machine and check each machined piece for proper shape or cut. They also replace worn or broken cutting tools. These workers use machinist handtools and precision measuring devices.

SAMPLE WORK ACTIVITIES

- Study blueprints and set up instructions
- Compare numbers shown on a display with numbers on the job order
- Thread a tape that has holes in it through a machine part
- Check new tapes by putting them through test runs
- Assemble and preset cutting tools
- Install cutting tools in the machine
- Use machinist handtools to install workpiece holders, such as blocks and clamps
- Position workpieces on the bed of a machine
- Start a computer that controls the machine's operations
- Start and stop the machine
- Fit a template over a part to be shaped
- Use scales, gauges, and meters to check machine operations
- Use precision instruments to check machined workpieces

HOURS OF WORK/TRAVEL

- Some of these jobs may require shift work.

SAMPLE PLACES OF WORK

- Machine shops
- Tool manufacturing plants
- Any manufacturing plant that uses numerical control machines

7329 METALWORKING AND PLASTICWORKING MACHINE SETUP OPERATORS, MISCELLANEOUS

These workers set up and operate machines used to shape or form metal or plastic parts for products. They generally work with several types of machines, and may set up a variety of machines for other workers to operate. They follow blueprints and charts to prepare the machines for operations. They install and adjust machine units and repair or replace faulty parts. They operate the machines by moving controls, such as switches and valves. They may place stock in the machine by hand or with a hoist. They also measure finished parts, sharpen tools, and oil machinery units as required.

SAMPLE WORK ACTIVITIES

- Set up and operate machines such as lathes, grinders, and saws to:
 - . Build up worn clutch plates and piston rods
 - . Make tools, dies, and patterns from metal stock
 - . Machine gear teeth on metal blanks
 - . Cut patterns in metal or plastic stock
 - . Thread and cut metal stock
 - . Straighten, cut, and head wire to form straight pins
 - . Bend, punch, or weld metal parts
 - . Form articles from sheet metal to groove and shape bullets
 - . Saw or mill parts for jewelry
 - . Trim excess metal from the edges of silverware
- Read work orders to locate cutting layout lines on stock
- Study blueprints, sketches, and standard chart
- Install and adjust machine attachments, using handtools
- Compute machine settings required to machine parts
- Place stock on a cutting table by hand or by using a hoist
- Move controls to position tools and workpieces
- Turn a valve to direct coolant or cutting oil against workpieces being machined
- Change worn cutting tools and adjust the cutting speed, feed rate, and depth of cut, as required
- Check the dimensions of finished workpieces
- Make minor repairs to machines
- Sharpen die cutters on a grinding wheel
- Grease and oil machinery, using a grease gun, oilcan, and brush
- Set up and adjust lathes, milling machines, and drill punches for other workers to use
- Set up a variety of machines to cut, drill, bore, and assemble clock and timer parts

HOURS OF WORK/TRAVEL

- Some of these jobs may require shift work.

SAMPLE PLACES OF WORK

- Manufacturing plants, including those that produce:

- . Aircraft and aircraft parts
- . Ammunition
- . Clocks and watches
- . Electrical equipment
- . Electronics products
- . Firearms
- . Instruments and appliances
- . Jewelry

- . Lighting fixtures
- . Machinery
- . Motorcycles and bicycles
- . Nuts and bolts
- . Office machines
- . Plastic products
- . Silverware
- . Sports equipment

- Machine shops

733 METAL FABRICATING MACHINE SETUP OPERATORS

These workers set up and operate machines that shape and assemble metal parts. They may also set up and operate welding machinery. They may set up a series of machines and train other workers to use them. Setup operators read work orders, install machine attachments, and adjust controls. They may mark workpieces at weld points or set temperatures on welding devices. They may sharpen machine cutting tools, clean and oil parts, and make minor repairs.

7332 WELDING MACHINE SETUP OPERATORS

These workers set up and operate machines to weld metal parts together. They follow blueprints, layouts, and welding procedures. They measure and mark weld points on workpieces. They use handtools to install and adjust machine attachments, and may design and build special machine fixtures. They also set up or adjust heating equipment, such as gas torches or electric heating units. They start the machines and check machine operations. They also clean, oil, and maintain equipment. They may train workers to use the equipment.

SAMPLE WORK ACTIVITIES

- Set up and operate a welding machine to weld together parts of fabricated metal products
 - . Follow blueprints, layouts, welding procedures, and operating charts
 - . Turn cranks or push buttons to align machine attachments
 - . Clamp workpieces onto turning rolls
 - . Thread electrode wire through feed rolls
 - . Turn knobs to set the current, voltage, and slope of the welding action
 - . Start the machine, and watch meters and gauges to check machine operations
- Clamp welding torches onto welding machines
 - . Turn a crank to line up the torch with the weld line
 - . Select torch tips, filler wire, and flux, according to the thickness and type of metal to be welded
 - . Connect hoses from the torch to containers of oxygen and fuel
 - . Turn valves to start the flow of gases
- Set up welding machines used to join or bond metal panels, frames, and containers
 - . Lay out and mark weld points on workpieces, using a ruler, square, templates and a scribe
 - . Bolt attachments onto the machines
 - . Compute the settings to be used for new work, using knowledge of metals, welding, and shop math
 - . Make trial welds
 - . Devise and build machine fixtures
 - . Train workers to braze or solder metals
 - . Clean, oil, and maintain welding equipment

HOURS OF WORK/TRAVEL

56

- Many metal-working plants and manufacturing firms operate on an 8-hour shift schedule. Workers in these places may have to work the evening or night shift.

SAMPLE PLACES OF WORK

- Welding shops
- Automobile manufacturing plants
- Appliance manufacturing firms
- Shipbuilding firms
- Aircraft manufacturers
- Sheet metal firms
- Any industrial plant that uses welding equipment to assemble parts or products

7333 SOLDERING AND BRAZING MACHINE SETUP OPERATORS

These workers set up and operate machines used to braze or bond together metal parts. They follow blueprints and work orders to set up the machines. They position and adjust machine fixtures and guides and install heating coils or set up gas torches. They load the machines with brazing wire, position workpieces in the machines, and adjust controls to regulate the heating units. After metal parts are bonded, they are cooled them with water or acid baths and then checked.

SAMPLE WORK ACTIVITIES

- Set up and operate electric heating equipment to braze (bond) metal parts
 - . Use a square, ruler, and template to position clamping devices and stops in a machine
 - . Bend copper wire into heating coils
 - . Bolt the heating coils to an electrode
 - . Turn knobs to adjust electric current going to the heating coils
 - . Position workpieces in the machine
 - . Set up and operate gas torches to braze metal parts
 - . Spray water on finished workpieces to cool them
 - . Clamp torches into a thermal brazing machine
 - . Load a reel of brazing wire onto a machine holder
 - . Connect hoses from oxygen and fuel tanks to regulator valves and torches
 - . Turn valves to start the flow of gases from fuel tanks
 - . Light a torch and adjust the mixture of fuel and oxygen to set a flame of a certain size and color
 - . Check finished workpieces for defective seams

HOURS OF WORK TRAVEL

- These jobs may require shift work.

SAMPLE PLACES OF WORK

- Aircraft manufacturers
- Appliance manufacturers
- Auto manufacturing plants
- Industrial plants
- Sheet metal firms
- Shipbuilding companies
- Welding shops and firms

7339 FABRICATING MACHINE SETUP OPERATORS, MISCELLANEOUS

These workers set up and operate machines used to shape and assemble metal parts. They may operate one or several machines, or set up a series of machines for other workers to operate. They follow blueprints and charts to prepare the machines for operation. They install and adjust machine tools, and move controls to regulate machine processes. They may sharpen cutting tools, clean and oil parts, and replace defective units. They may train other workers to operate the machines. They also may use meters and gauges to check the dimensions of sample products.

SAMPLE WORK ACTIVITIES

- Set up and/or operate machines to:
 - . Trim gun cartridge cases to size
 - . Cut grooves into shotgun shell caps
 - . Make springs from steel wire
 - . Form tin can bodies
 - . Weave wire into screening
 - . Bend, punch, and weld metal to make cans and tubing
 - . Shape steel bullets
 - . Punch, cut, and bend wire to make hair pins
 - . Weave wire filters on strainers
 - . Cut and shape wire to make nails or safety pins
 - . Make electrical cable
 - . Lamps or metal artwork
 - . Assemble clock and watch parts
- Follow blueprints and set up charts to prepare machines for operation
- Install punches, dies, feed pipes, and guides in machines
- Sharpen dulled cutters, using bench grinders
- Light and tend gas burners under soldering vats
- Position machine stops, guides, and turntables
- Move controls to adjust the feed speed and depth of cut of machine units
- Use handtools to feed wire through machine units
- Check finished workpieces for defects, such as scratches or dents
- Measure sample products, using precision meters and gauges
- Replace defective machine units
- Take machine units apart to remove jammed components
- Oil and clean machines
- Train workers to operate metalworking machines
- Work under contract as an APPRENTICE while learning to do ornamental metal work

HOURS OF WORK/TRAVEL

- Many manufacturing plants operate on an 8-hour shift schedule. Workers in plant jobs may at times be required to work during the evenings or nights.

SAMPLE PLACES OF WORK

- Manufacturing plants, including those that produce:
 - . Aircraft and aircraft parts
 - . Ammunition
 - . Automobiles
 - . Clocks and watches
 - . Concrete products
 - . Electrical equipment
 - . Fabricated metal products
 - . Insulated wire
 - . Mattresses and bedsprings
 - . Metal springs
 - . Musical instruments
 - . Nails
 - . Needles, pins, and related products
 - . Tinware
 - . Wirework
- Welding shops
- Automobile service departments

734 METAL AND PLASTIC PROCESSING MACHINE SETUP OPERATORS

These workers set up and operate machines that process plastics or metal products. They may set up machines that cut, shape, and fit together metal or plastic parts. Others set up machines that heat metal to harden or temper it, or to mold or cast it into objects. Some set up plating or coating machines. Workers read work orders, install and adjust attachments, adjust temperatures and other settings, and load materials. They watch operations and check work.

7342 MOLDING AND CASTING MACHINE SETUP OPERATORS

These workers set up and operate machines to mold or cast plastic or metal materials to make objects of a particular shape. Some use equipment to heat metal or plastic to a liquid form and shape it in molds. Some cast metal parts using a machine that forces molten metal into special dies. Some set up machines to compress plastic into forms or molds. These workers use handtools and gauges to install and adjust machine attachments. They load materials into the machines, operate machine controls, and check sample products for defects.

SAMPLE WORK ACTIVITIES

- Set up and operate a die press to cast motor parts
 - . Mount cores for electrical parts onto the machine
 - . Use fixed gauges to check the angle of cores
 - . Load aluminum bar stock into a furnace
 - . Turn a valve to control the temperature of the aluminum
 - . Pour the molten aluminum into a machine container, using a hand ladle
 - . Load the die and core assembly into the press
 - . Pull levers to force the molten aluminum through and around the core assembly to cast motor parts
 - . Remove finished parts from the press and stamp them with numbers
- Set up diecasting machines to cast motor parts
 - . Use a hoist to lift die sections into machines
 - . Use handtools to secure the die sections in place and to adjust the stroke of the machine ram
 - . Connect water hoses to the cooling system of the die
 - . Preheat die sections with a torch or electric heater
 - . Turn valves and set dials to control the flow of water through the die, the timing cycle, and the machine speed of the machine
 - . Start the machine to produce sample castings
 - . Examine sample castings to check the machine setup
 - . Replace worn machine parts, such as air lines, gaslines, and gaskets
- Set up and adjust a series of machines that compress powdered plastics into tablets used in molding buttons
 - . Use a wrench to install dies and punches in machines
 - . Dump premixed plastic powder into machine hoppers
 - . Pull a lever to close dies and inject plastic into them to cast parts
 - . Trim excess plastic from cast parts, using a knife

HOURS OF WORK/TRAVEL

- These jobs may require shift work.

SAMPLE PLACES OF WORK

- Electrical equipment manufacturers
- Auto parts manufacturers
- Foundries

- Companies that produce phonograph equipment
- Button manufacturers
- Any company that produces metal or plastic parts or products

7343 PLATING AND COATING MACHINE SETUP OPERATORS

These workers set up and operate equipment to cover objects with metal or other materials. They may plate or coat objects to protect them, build them up, or make them look or work better. They fill machine tanks with coating solutions, and may clean and rinse objects to be coated by placing or dipping in baths. They load the objects into the machines and adjust controls to regulate machine processes. Once objects are coated, they may test, wash, and polish them or measure their dimensions.

SAMPLE WORK ACTIVITIES

- Setup and operate equipment to:
 - . Coat steel wire with zinc
 - . Coat silverware or jewelry items with metal to decorate or build up their surfaces
 - . Plate steel sheets with protective metal coatings
 - . Coat coils of sheet metal with paint, plastic, or film
 - . Coat plastic or paper sheeting with ink to make carbon paper
- Read work orders to determine the size and makeup of objects to be plated
- Dip objects in cleaning and rinsing baths
- Dip objects into plating solutions
- Mix chemical solutions, using formulas
- Fill cleaning, galvanizing, and waxing tanks
- Load materials or objects into a machine to be coated
- Start equipment to pump paint or a coating solution into machine containers
- Turn setscrews to adjust the distance between machine rollers that control the thickness of the coatings
- Load a furnace with coal to prepare it for heating plated objects
- Move controls to regulate the movement of wire between reels, plating tanks, and electric coils
- Move controls to adjust the flow of current through plating solutions
- Adjust controls to regulate the temperature in plating tanks
- Perform chemical tests on the plated objects and readjust machine controls as required
- Record test results
- Grind, polish, or rinse plated objects until their surfaces are clean and even
- Use precision measuring devices to check coated objects
- Work under contract as an APPRENTICE while learning the plating craft

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Automobile manufacturers
- Wire manufacturers
- Firms that make coiled springs
- Silverware and jewelry firms
- Companies that make plumbing fixtures
- Companies that make electronic products
- Companies that make carbon paper

7344 HEATING EQUIPMENT SETUP OPERATORS

These workers set up and operate equipment used to heat metals. Often, they set up a series of machines for use by other workers. They install machine attachments and determine the temperature and time required to process products. They may light and adjust gas burners or set switches to control electric heating coils. They may mount workpieces in machines and start feeding devices that move the pieces through heat. They also replace worn machine parts and may teach new workers to operate the machines.

SAMPLE WORK ACTIVITIES

- Set up and operate a series of machines to anneal (toughen or temper by heat) metal cartridge cases
 - . Light gas burners and turn valves to control the flow of gas and coolant water
 - . Start conveyors and feeder plates
 - . Turn setscrews in the burner nozzle to direct flames on parts to be heat-treated
 - . Replace worn burner and conveyor parts, using handtools
 - . Teach new workers to operate the machines
- Set up flame-hardening machines for use by other workers
 - . Position machine fixtures to hold workpieces
 - . Fasten fixtures to the machines, using wrenches
 - . Mount workpieces in the machines
 - . Estimate the flame temperature and heating time needed to treat metal
 - . Move controls to light burners and adjust the gas flame
 - . Start an automatic feeding device that moves parts through the hardening flame
 - . Test the hardness of sample parts
- Set up a variety of induction machines used to heat-treat metal objects
 - . Read work orders to determine the size and grade of workpieces to be processed
 - . Determine the current, time cycle, and heating coil to be used for each job
 - . Adjust controls to set the frequency of current
 - . Position and fasten parts in the machine for processing

HOURS OF WORK/TRAVEL

- Many metal plants and mills operate on an 8-hour shift schedule. Workers in these places may have to work the evening or night shift.

SAMPLE PLACES OF WORK

- Iron and steel mills
- Plants that produce metal cartridge and shell cases
- Tool manufacturing plants
- Plants that produce machine parts

7349 MISCELLANEOUS METAL AND PLASTIC PROCESSING MACHINE SETUP OPERATORS

These people set up and operate machines used to cut, shape, and fit together metal or plastic parts. For example, some set up work with automatic machines that cut and shape metal to make bullets. They select and install the required dies and cutting tools. They adjust the machine pressure and cutting tools, and load the machine with material to be processed. They start the machine, examine and inspect samples for accuracy.

SAMPLE WORK ACTIVITIES

- Install and align machine dies and cutting tools
- Adjust the pressure and depth of stroke of machine cutting tools, using handtools and gauges
- Thread lead wire through machine guides and pulleys
- Start the machine to obtain a sample product
- Test sample products to check the machine setup
- Examine products for defects
- Use gauges to measure finished workpieces

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Ammunition manufacturing plants
- Plants that produce metal or plastic products

743 WOODWORKING MACHINE SETUP OPERATORS

These workers set up and operate machines that process wood. They may set up lathes that shape furniture legs or run machines that cut veneers. Others set up and run routers that cut grooves or designs, jointers that smooth wood to be joined, sanders, and saws. They read work orders, install attachments and blades, adjust machine settings, and feed materials into machines. They control machine processes, check work for defects, and sharpen cutting edges.

7431 LATHE AND TURNING MACHINE SETUP OPERATORS

These workers set up and operate machines used to cut and shape articles from rough woodstock. They study blueprints, patterns, and job orders to determine the size and shape the articles should be. They select the proper knives or cutting heads and install them in the machine. They also may install devices that control the rotation and shape of the stock being cut. They secure the woodstock in a holding device, start the machine, and move controls to regulate the action of the machine. They check the dimensions of shaped products, using a template or other measuring devices.

SAMPLE WORK ACTIVITIES

- Set up and operate a rotary cutting lathe to cut wooden parts used in making furniture
 - Study blueprints, drawings, patterns, and job orders to determine the size and shape of finished products
 - Install knives on the cutting heads of the machine spindle, using a template, a rule, calipers, and wrenches
 - Select and install cams that control the rotation and shape of stock to be cut
 - Insert woodstock between machine fixtures and turn a crank to clamp the stock into position
 - Start the machine and move a lever to swing the stock against rotating cutters until the stock is shaped
 - Check the dimensions of shaped products, using a template or calipers and a rule
 - Use a bench grinder to sharpen dull cutting knives
- Set up and operate a rotary lathe to cut veneer from logs

- Adjust gears of the knife-feeding unit, according to the thickness of veneer to be cut
 - Signal a worker to position logs on the lathe
 - Adjust the lathe knife to cut veneer to a specified thickness and to start the log turning
 - Check the thickness of veneer with a ruler and caliper
 - Push a control to release the log core onto a conveyor
- Set up and operate a bench-mounted carving machine to carve decorative designs on wood furniture stock
 - Study drawings of designs to be carved
 - Select the proper machine cutters
 - Guide stock against a rotating cutter to carve designs

HOURS OF WORK/TRAVEL

- Many furniture and woodworking plants operate on 8-hour shift schedules. Workers in these places may have to work the evening or night shift.

SAMPLE PLACES OF WORK

- Woodworking plants
- Furniture plants
- Mills that cut veneer sheets from logs

7432 ROUTER AND PLANER MACHINE SETUP OPERATORS

These people set up and operate machines to cut grooves, notches, and designs in wood. They also smooth the surfaces of wood pieces before they are joined, fastened, or finished. They select and install cutting heads and adjust knives, guides, and stops, according to the size and shape of cuts to be made. They use measuring devices to check machine settings and the size of the stock. They may lay out and mark cuts to be made on the stock. They may clamp stock in a machine holding device or place it on a conveyor that leads to the machine. They may move stock under rotating bits to cut specified designs. These workers use handtools and may work from blueprints, drawings, or samples to set up and adjust the machines.

SAMPLE WORK ACTIVITIES

- Set up and operate a machine to shape the ends of wooden parts to fit into the sockets of implements
- Select and install cutting heads
- Adjust knives, guides, and stops, according to the size and shape of cuts to be made
- Check the distances of settings and the size of stock, using a rule and calipers
- Clamp stock in holding devices
- Start the machine, and turn a handwheel to feed stock into the cutting head
- Set up and operate a mortiser machine to cut slots in woodstock
- Install a special chain saw assembly in the machine
- Adjust the spacings of cutterheads, according to job order requirements
- Lay out and mark cuts to be made on the stock, using rule and pencil
- Adjust the machine table or cutting head into the woodstock
- Set up and operate a planer machine to surface and size woodstock used to make furniture
- Install knives in the cutterhead, using wrenches and saws
- Turn handwheels to adjust the table level, pressure bars, and feed rolls
- Position woodstock on a conveyor that carries it through the planer
- Inspect and feel planed woodstock to check the smoothness of cut and thickness of the stock
- Set up and operate a routing machine to cut slots, grooves, or designs in wooden stock
- Study blueprints, drawings, or samples to determine the size, depth, and location of cuts to be made
- Install router bits in the spindle chucks using a chuck key
- Space spindles on the shaft at specified distances, using wrenches
- Press a pedal to raise the machine table and feed stock into rotating bits

- Move stock under the bits, following guides, lines, or slots in the jig, to cut specified designs
- Set up and operate a machine to smooth square, and apply glue to the edges of veneer sheets
- Set up and operate a machine to cut notches and bevels in rafters for pre-made houses

HOURS OF WORK/TRAVEL

- Many furniture and woodworkings plants operate on an 8-hour shift basis. Workers in these places may have to work evenings or night shifts.

SAMPLE PLACES OF WORK

- Furniture manufacturing plants
- Veneer and plywood plants
- Plants that make parts for prefabricated houses

7433 SAWING MACHINE SETUP OPERATOR

These workers set up and operate machines used to saw, shred, or shape wood. They install the required knives, saw blade, or cutters in the machine and adjust the machine cutterhead and table for the size of stock and cuts to be made. They bolt or clamp a jig (holding and guiding tool) to the machine table, place stock in the jig, and push the table into position for the sawing process. They operate controls to advance and regulate the cutterhead that shapes the wood.

SAMPLE WORK ACTIVITIES

- Set up machines to shred woodstock into wood shavings
 - . Install machine knives and spurs (metal combs that make grooves in the surface of woodstock), using handtools
 - . Turn setscrews and move levers to control machine feeds and the depth of cut
 - . Sharpen knives and spurs
- Set up and operate machines to saw woodstock to size and shape the ends of the stock
 - . Select knives, according to the type of cut specified
 - . Bolt the knives onto machine cutterheads
 - . Adjust the angle of the machine tables
 - . Bolt or clamp holding jigs onto machine tables
 - . Place stock in machine jig
 - . Advance stock into machine saws to trim the ends of stocks
 - . Press a pedal to control the cutterheads that shape the ends of stock
- Set up and operate a machine to saw, groove, and drill holes in wooden staves used to reinforce the corners of furniture frames
 - . Set the angle of the cutoff saw
 - . Install bits and saws, according to a work ticket
 - . Position staves (thin pieces of wood) on the machine table
 - . Line up marks on the staff with the saw and clamp the staves into position
 - . Pull the saw and cutter assembly across the staff
 - . To saw and shape them

HOURS OF WORK/TRAVEL

- Many furniture and woodworkings plants operate on 8-hour shift schedules. Workers may have to work the evenings or night shift.

SAMPLE PLACES OF WORK

- Furniture manufacturing plants
- Plants that make wood products
- Woodworking plants
- Sawmills

7434 SANDING MACHINE SETUP OPERATORS

These workers set up and operate machines used to sand and smooth wood. They read work tickets to determine the grade, type, and amount of woodstock to be sanded. They may build sanding forms for use in the machine, or they may install from existing forms. They wrap sandpaper around the form or around machine sanding drums, and then turn handwheels to control the speed and tension of the sanding belts. They may position stock in the machines or feed it between machine rollers. They inspect, feel, and may measure finished stock to check its smoothness and dimensions.

SAMPLE WORK ACTIVITIES

- Move woodstock to machines, using a handtruck
- Build sanding forms, using handtools and fabric tape
- Clamp sanding forms in machines
- Wrap sandpaper around machine drums
- Turn handwheels to control the speed and tension of sanding and feed belts
- Place stock against machine stops
- Feed woodstock between rolls that carry it under sanding drums
- Watch meters and turn handwheels to adjust the tension of the drums
- Inspect and feel stock to check its smoothness
- Sand flat surfaces with hand-held sanding forms
- Use a gauge to check the thickness of sanded surfaces
- Replace sandpaper on the drums, when necessary

HOURS OF WORK/TRAVEL

- Many furniture and woodworking plants operate on an 8-hour shift schedules. Workers in these places may have to work evening or night shifts.

SAMPLE PLACES OF WORK

- Furniture manufacturing plants
- Plants that make wooden parts
- Woodworking shops

7435 SHAPING AND JOINING MACHINE SETUP OPERATORS

These workers set up and operate machines to plane, shape, and groove wooden parts so that they can be joined together. They read work tickets and examine pattern shapes to determine the type of woodstock to use and the machine settings required. They select and install the proper cutting heads and patterns, using wrenches and gauges. They adjust the machines cutting knives, guides, pressure bars and table level, and insert woodstock into a feed unit. They watch the stock being cut and carefully measure each finished piece.

SAMPLE WORK ACTIVITIES

- Read work tickets and examine pattern shapes to determine the type of woodstock to cut and the machine setup required
- Install cutting heads in machines, using wrenches and gauges
- Position patterns on the machines
- Turn a handwheel to adjust cutting knives so they will be flush with a pattern
- Turn a handwheel to adjust guides, pressure bars, and table levels
- Place stock on a feed table
- Press feed rollers against stock so the stock can be fed through the machine
- Watch stock being cut to detect defects
- Use gauges, a rule, or calipers to check the dimensions of cut material

HOURS OF WORK/TRAVEL

- Many furniture plants operate on 8-hour shift schedules. Workers in these plants may be required to work the evening or night shift.

SAMPLE PLACES OF WORK

- Furniture manufacturing plants
- Plants that make wooden parts
- Sawmills
- Woodworking shops

7439 MISCELLANEOUS WOODWORKING MACHINE SETUP OPERATORS

These workers set up and operate machines used to cut, shape, and fasten together wooden parts. They study blueprints, drawings, samples, or work orders to determine the tools and set up required. They install and adjust knives, saws, or other cutting tools. They adjust machine guides, pressure arms, and stops. They may position wooden stock in the machine to be cut, or feed the stock into a machine hopper. They use handtools and measuring devices.

SAMPLE WORK ACTIVITIES

- Set up various types of woodworking machines, such as lathes, molders, saws, and planers, for other workers to tend or operate
- Study blueprints, drawings, samples, or work orders to determine the tools and setup required
- Use a bandsaw, shaper, jointer, drill press, and handtools to cut wooden parts
- Select cutter knives, according to the type of cut desired
- Bolt cutters in the machine using handtools
- Adjust stock guides, pressure arms, and glue discharge pipes
- Measure the location and depth of holes
- Position stock in the machine
- Clean machines, using an air hose and rags

HOURS OF WORK/TRAVEL

- Many furniture plants and woodworking shops operate on 8-hour shift schedules. Workers in these places may be required to work evening or night shifts.

SAMPLE PLACES OF WORK

- Clock manufacturers
- Companies that manufacture barrels or wooden boxes
- Furniture manufacturing plants
- Planing mills

- Plants that make wooden parts
- Woodworking shops

744 PRINTING MACHINE SETUP OPERATORS

These workers set up and operate machines used in printing operations. They may run machines that produce typeset materials, emboss and engrave paper, or print pictures. Others run machines or cameras that transfer letters or designs to cloth or paper, or perform other printing functions such as processing name tags or books. They read work orders, set up and adjust machines, load materials, watch machine operations, and check finished work.

7443 PRINTING PRESS SETUP OPERATORS

These people set up and operate printing presses to produce printed material. For example, they may print type-set material, engrave designs or lettering, punch holes in data cards, or print pictures or other subject matter. They follow job orders to select the required materials, and prepare the machine for operation. They fill ink containers and adjust press controls and feeding devices. They may insert typeset in the machine, or install engraved printing cylinders or plates. They also may thread paper through the press. They run off proofsheets to check the machine set up. They also clean, inspect, and oil the moving parts of the press.

SAMPLE WORK ACTIVITIES

- Make ready and operate a printing press to produce printed material
- Check the size, color, type of paper, and color of ink to be used, by reading job orders
- Clean inking rollers and replace them in the press
- Adjust ink control devices
- Pack the impression cylinder with tissue or foil
- Start the press and run-off proofsheets
- Examine proofs to determine whether press adjustments are required
- Adjust press controls, inking fountains, and automatic feeders
- Work under contract as an APPRENTICE PRESS OPERATOR
- Insert type setup in the press bed
- Tighten locking attachments, using a wrench
- Adjust inking rollers to obtain even inking
- Prepare and operate a press that prints pictures and other subject matter
- Install engraved printing cylinders in the press, using handtools
- Thread printing paper through the press
- Set the focus on electronic scanners to control color registration
- Regulate the temperature in drying chambers
- Adjust automatic paper cutters
- Inspect material being printed, and adjust the press as required
- Make ready and operate a rotary press to print newspapers, books, and magazines
- Lock printing plates on the printing cylinder
- Thread the loose end of the paper supply roll through and around rollers to the cutter and folder
- Operate a fasting device to splice the end of a new paper roll to the used-up roll
- Replace cutting blades, worn or damaged ink rolls, and fill ink wells
- Clean, inspect, and oil the moving parts of the press
- Supervise and train an APPRENTICE
- Set up and operate printing presses, plate-making equipment, and other machines to print and produce box wrappers, ads, or similar products
- Prepare and operate a press to engrave designs or lettering on announcements, greeting cards, and business cards
- Set up and operate specially equipped presses to print, perforate (punch holes in) number, and cut data processing cards
- Set up and operate a machine to print designs on rolls of paper used as hot iron patterns

HOURS OF WORK/TRAVEL

- Many PRINTING PRESS OPERATORS work evenings and night shifts.

SAMPLE PLACES OF WORK

- Commercial printing shops
- Book and magazine publishers
- Newspaper plants
- Banks, insurance companies, manufacturers, and other organizations that do their own printing
- Federal, State, and Local governments

7444 PHOTOENGRAVING AND LITHOGRAPHING MACHINE SETUP OPERATORS

These workers set up and operate machines, cameras, or other equipment to print or transfer letters, designs, or pictures onto articles. They read job orders, determine the machine setups required, and use handtools and gauges to install and adjust machine units. They move controls to regulate machine actions. They check printed material for defects, and repair or replace machinery parts as required. They may also load materials in machines, fill ink or other containers, mix ingredients, clean and oil machinery, and keep work records.

SAMPLE WORK ACTIVITIES

- Set up and operate:
 - . A lithograph press to print words and designs on templates
 - . A press to print colored designs on rolls of plastic material
 - . A press to print labels or trademarks onto hat linings
 - . A battery of machines to print numbers and lines on measuring tape
 - . A machine to print words and designs on cardboard or wooden boxes
 - . A camera to take pictures of drawings used to make printing plate negatives
 - . Machines to transfer designs from printing plates to cloth-printing rollers
 - . A machine to print colored patterns on wallpaper
- Install printing plates on machine rolls, using handtools and gauges
- Install dies and inking rollers
- Tighten or loosen inking rollers, using a wrench
- Sharpen machine blades, using a file and oilstone
- Use an electric hoist to mount a type-holding wheel on the machine
- Follow job orders to blend colored inks
- Fill ink containers
- Ink disks and rollers, using a brush or sponge
- Feed cards or sheets onto the bed of a machine press
- Thread paper or wire through machines
- Stack boxes in a feed hopper
- Move controls to regulate the speed and feed of a machine press
- Remove material from the press by hand
- Repair or replace broken or worn parts of the press
- Mix inks in a power mixer, following a formula
- Clean plates and ink rollers, using rags
- Compute camera settings
- Expose and develop film
- Keep records of the amount of cloth printed

HOURS OF WORK/TRAVEL

- These jobs generally involve a regular 8-hour day. However, shift work, weekend work, or overtime may be required.

SAMPLE PLACES OF WORK

- Manufacturing plants, including those that produce:

- . Clothing
 - . Coated fabrics
 - . Electronics products
 - . Insulated wire
 - . Plastic products
 - . Tinware
 - . Tools and cutlery
 - . Wallpaper
- Printing and publishing companies

7449 PRINTING MACHINE SETUP OPERATORS, MISCELLANEOUS

These people set up and operate machines used to process printed products, such as paper tags and labels, cloth, books, and related items. They read work orders or blueprints to determine the machine setups required. They use handtools and measuring devices to install and adjust machine attachments. They may also fill ink containers or glue pots and mount or load materials in the machines. They may patrol the work area to detect and correct machinery problems. They may also check sample products for defects and keep production records.

SAMPLE WORK ACTIVITIES

- Set up and/or operate one or more machines to:
 - . Print, cut, and punch paperboard to make paper tags and labels
 - . Print designs on cloth articles
 - . Apply reinforcing materials to the back of books
 - . Gather pages to form books
 - . Stitch or glue pages into books
 - . Cover book bodies with covers
 - . Gather, stitch, and trim folded pages to form magazines or pamphlets
 - . Glue paper linings to book bodies
 - . Clamp metal edging to the ends of calendar pages
 - . Cast and assemble type for printing
 - . Trim and mount printing plates
 - . Emboss lettering and designs on book covers
 - . Print work on paper products
- Read blueprints or work orders to determine how to set up machines
- Mount paperboard rolls on the machine, using a Jack
- Install and adjust printing plates, using a wrench and rule
- Spread ink onto the printing plate, using a hand scraper
- Turn a handwheel to position machine units
- Adjust the angle of the machine cutting blade
- Fill machine ink containers
- Fill glue pots and adjust the flow of glue
- Loosen and tighten bolts and align the printing screen
- Start the machine and watch it operate to detect problems
- Patrol a work area to detect problems and damaged screens
- Adjust machine parts to correct problems
- Inspect completed articles for defects
- Keep production records
- Work under contract as an APPRENTICE while learning to operate embossing machines

HOURS OF WORK/TRAVEL

- Many plants operate around the clock, three shifts a day, 7 days a week. Production workers usually can expect to work on evening or night shifts from time to time.

SAMPLE PLACES OF WORK

- Manufacturing plants, including those that produce:
 - . Ammunition
 - . Glass products
 - . Paper goods products
 - . Textiles
 - . Wallpaper
- Printing and publishing companies
- Type foundries
- Companies that make or repair signs and related items

745 TEXTILE MACHINE SETUP OPERATORS

These workers set up and operate machines that make or process textile products. They may run machines that shape garments, cut cloth, quilt design, weave fabrics, knit hosiery, or twist fibers. Workers read work orders, install required attachments, adjust machines, and test machine operation. They set controls, load materials to be processed, watch machine operations, and check finished products.

7451 WINDING AND TWISTING MACHINE SETUP OPERATORS

These workers set up and operate machines to make rope, yarn, or fibers. They install and adjust attachments to prepare machines for operation. They use handtools and may follow charts or instructions to set up and adjust the machines. They patrol the work area to detect problems with machine operations and repair or replace worn or damaged machine parts. They also oil or grease moving parts and wearing surfaces of machines.

SAMPLE WORK ACTIVITIES

- Install dies and gears in machines to prepare them for making different sizes of ropes
- Turn setscrews to adjust machines
- Change gears, pulleys, rollers, guides, and heat units on machines
- Use gauges and meters to check machine adjustments
- Patrol a work area to detect problems with machines
- Inspect machines to determine why they are not working properly
- Replace worn or damaged parts on machines
- Oil or grease the moving parts and wearing surfaces of machines

HOURS OF WORK/TRAVEL

- Some of these jobs may involve shift work.

SAMPLE PLACES OF WORK

- Textile mills
- Carpet and rug factories
- Companies that manufacture rope, cord, or twine

7452 KNITTING AND WEAVING MACHINE SETUP OPERATORS

These workers set up and operate machines that braid, knit, or weave yarn to make products such as rugs, underwear, cloth, and hosiery. They read work orders or study samples to determine the machine settings and yarns to use. They change gears that control the weaver, replace machine spindles, adjust tension devices, and may write down the machine settings used. They inspect finished products for defects. They may use handtools, hoists, and measuring tools to set up the machines and repair or replace worn parts.

SAMPLE WORK ACTIVITIES

- Set up machines to make braid of a certain size, style, or design

- Study a sample piece of braid to determine machine settings and the color, size, and arrangement of yarn to use.
 - Change gears to set up a machine for flat or round braid, using handtools
 - Replace machine spindles to change the crossing order of treads used in braid
 - Adjust the tread tension to make different styles of braid
 - Write down the machine settings used to make new styles of braid
- Set up looms to weave piled carpeting
- Inspect woven carpeting to determine if a loom needs adjustments or repairs
 - Repair or replace defective parts on a loom, using handtools and measuring tools
 - Follow diagrams and read manuals to determine how to set up, adjust, and repair looms
 - Level and align machine parts, using a straightedge
 - Adjust the tension and timing of loom parts
 - Examine loom parts, thread, and cloth being woven to make sure the loom is set up correctly
 - Use a hoist to replace the harness assembly on a loom
 - Install pattern tapes that control the operation of a loom
- Set up and operate a series of machines to knit garments, cloth, or hose

HOURS OF WORK/TRAVEL

- Many knitting and weaving businesses operate on 8-hour shift schedules. Shift work may be required in some jobs.

SAMPLE PLACES OF WORK

- Knitting mills that make fabric, hosiery, and garment parts
- Plants that make braided materials, such as shoe laces and narrow fabrics
- Plants that manufacture braided rugs
- Textile mills that manufacture cloth

7459 TEXTILE MACHINE SETUP OPERATORS, N.E.C.

These people set up and operate machines and equipment to make or process textile products. This includes machines used to shape and dry garments, cut cloth, quilt designs, weave fabrics, and treat yarn. They determine the machine setups required and install and adjust machine attachments. They may sharpen cutting tools and thread material into the machine. They also may repair or replace defective machine parts. They operate the machines by watching gauges and adjusting controls. They may keep work records and train workers to use the machines.

SAMPLE WORK ACTIVITIES

- Set up and/or operate one or more machines to:
 - Polish yarn
 - Produce punched felt
 - Embroider emblems or uniforms or other items
 - Make quilted padding
 - Shape and dry hosiery
 - Cut cloth
 - Bond, stitch, or finish thread
- Study charts to determine how to set up machines for different operations
- Select machine attachments and bolt them to holders, using wrenches
- Arrange the needles in a loom, according to loom operator instructions
- Sharpen machine knives with a hone
- Thread machine units
- Operate machines for test runs to check their operations
- Take machines apart and repair broken or defective parts
- Replace worn or broken parts, such as conveyors, boarding forms, and electric motors
- Clean and oil machines
- Read production tickets and record the total number of units produced
- Separate thread packages according to color and type

- Change machine gears to control feed units
- Watch gauges and turn valves to control the steam pressure and temperature in machine chambers
- Mix finish solutions
- Test threads for weights and strength, using standard tests
- Record test results on quality control reports
- Sew together material to form continuous rolls
- Train new textile workers
- Assign workers to machines
- Patrol a work area and examine cloth and machines to detect operating defects

HOURS OF WORK/TRAVEL

- These jobs may require shift work, as many textile plants operate on an 8-hour shift schedule.

SAMPLE PLACES OF WORK

- Hosiery mills
- Textile plants and mills
- Furniture manufacturers
- Felt goods manufacturers
- Factories that do trimmings and embroidery work
- Companies that quilt battins

746-7 ASSORTED MATERIALS: MACHINE SETUP OPERATORS

These workers set up and operate machines that make or process products. They may run machines that force products into specific shapes, stamp patterns on products, grind glass or coffee, coat and bake color TV tubes, process dairy products, or fold and glue envelopes. Workers read work orders, install required attachments, and test machinery operation. They set controls, measure and load ingredients, watch operations, and check finished products.

7462 PACKAGING AND FILLING MACHINE SETUP OPERATORS

These workers set up and operate machines used to fill containers with materials or to package products. They select, install, and adjust machine attachments, according to the size and type of product to be handled. They load materials into the machines and watch machine operations. When necessary, they stop machinery and remove jammed materials. They may also repair or replace worn or broken machine parts. They use handtools and may use scales and other weighing devices.

SAMPLE WORK ACTIVITIES

- Set up and/or operate one or more machines used to:
 - . Fill gun cartridge cases with powder and bullets
 - . Pack dynamite into paper shells to form dynamite sticks
 - . Pack potato chips or other products into bags
- Use handtools to install and adjust machine attachments, such as feed units, punches, and dies
- Weigh materials, using a scale
- Direct workers to fill machine hoppers
- Load paper containers or packaging material into machines
- Select feedspouts, according to the size of containers to be filled
- Attach feedspouts to filling or packaging machines
- Set filling-machine scales, according to the weight specified for filled bags
- Take machinery apart to remove jammed articles and to replace worn or broken parts

- Test products and record the results
- Clean, oil, and grease machine parts
- Polish machine punches and dies to remove scratches, using a bench grinder and emery cloth
- Place containers under a conveyor to catch materials overflowing from the machines
- Use a handtruck to take packed materials to a storage room
- Instruct new workers in the use of the machines and gauges

HOURS OF WORK/TRAVEL

- Many of these jobs involve work in factories or plants where shift work may be required.

SAMPLE PLACES OF WORK

- Ammunition manufacturing plants
- Brush manufacturers
- Companies that produce packaged products, such as potato chips
- Plants that make dynamite sticks

7463 EXTRUDING AND FORMING MACHINE SETUP OPERATORS

These workers set up and operate machines used to press out and form products such as candy, glassware, bricks, and rubber goods. They read work orders, install and adjust the required machine attachments, and then perform test runs with the machinery. They set machine controls, watch gauges and recorders, and record machine readings. They may hand-load materials into the machines or turn valves to admit materials. As products are extruded (forced out), they check them for defects and adjust the machines accordingly.

SAMPLE WORK ACTIVITIES

- Operate a machine that presses out candy in certain sizes and shapes
 - . Install the proper die plate in the machine
 - . Dump candy into a machine hopper
 - . Weigh formed pieces of candy to see if they meet standards
 - . Adjust machine cutting blades, as required
- Set up and operate a series of machines used to make brick and tile products
 - . Turn valves to control the flow of materials into machines
 - . Set controls on machine knives that cut clay workpieces to size
- Set up and operate machines that press, blow, or mold molten glass to form glass products
 - . Read work orders to determine the molds and machine parts needed
 - . Use handtools to install machine molds and parts
 - . Connect gas lines to burners under the molds
 - . Perform test runs
 - . Watch gauges and record machine readings
 - . Connect gas lines to burners under the molds

HOURS OF WORK/TRAVEL

- Some of these jobs may require shift work.

SAMPLE PLACES OF WORK

- Brick and tile making plants
- Candy factories
- Glass manufacturing plants
- Plants that produce fiberglass products
- Plastic products manufacturers
- Pottery manufacturers
- Rubber goods plants

7467 COMPRESSING AND COMPACTING MACHINE SETUP OPERATORS

These people set up and operate machines to press materials into shapes or press designs into surfaces. Some make items such as soap bars or medicine tablets. Others do such things as press designs on floor coverings or press cork into bottle caps. They install and adjust machine tools, load materials into the machines, and regulate machine controls. They watch the machines operate, clear machine jams and make other adjustments as necessary. They may measure, test, or weigh sample articles to make sure they were correctly made.

SAMPLE WORK ACTIVITIES

- Set up and operate a press to form medicine tablets of a specified size and shape
 - . Install dies in the machine
 - . Adjust the spring tension and ram pressure of the press, using handtools
 - . Scoop or dump ingredients into the machine hopper, and start the machine
 - . Examine, feel, and crumble finished tablets to detect defects
 - . Measure, weigh, and test samples, using special meters, scales, and testers
 - . Send products to a lab for testing
 - . Remove and clean dies and compression chambers
- Set up and operate a machine to compress milled soap into bars
 - . Unbolt the head of the machine and insert a plate that shapes and sizes the bar
 - . Open valves to admit steam into the heating coils
 - . Inspect compressed bars for color, size, and smoothness
- Set up and operate a battery of machines to compress and treat paper tubes used for shotgun shell bodies
 - . Use meters and gauges to check the size of machine attachments before they are installed
 - . Clear jammed tubes from the machine, and blow out closed oil lines with an airhose
- Set up and operate a press to emboss designs on floor coverings
 - . Install presspads and embossing plates in the press
 - . Position the floor covering in the press guides
 - . Regulate controls to move material into the press
 - . Watch pressure gauges and guide markers as material moves through the press
- Operate a battery of machines to insert and glue cork, paper, plastic, or aluminum foil in bottle cap shells
 - . Install punches and dies
 - . Turn setscrews to regulate the feed device, rate of glue flow, and heating flame
 - . Check sample caps for defects
 - . Take machines apart to replace broken or worn parts

HOURS OF WORK/TRAVEL

These jobs may require shift work.

SAMPLE PLACES OF WORK

- Soap manufacturing plants
- Drug companies
- Plants that make floor coverings
- Ammunition manufacturers
- Bottling companies
- Glass manufacturers

7472 ROASTING AND BAKING MACHINE SETUP OPERATORS

These people set up and operate roasting and baking machines. They start heating units and set controls to regulate baking time, temperature, and machine operations. They use handtools to adjust machine controls. Some workers set up and operate equipment such as roasters, dryers, and grinders to process cocoa beans to make chocolate liquor. Others operate equipment used to bake and coat color TV tubes, or glaze pottery. These workers control conveyors or pumps that move materials into or out of the machines.

SAMPLE WORK ACTIVITIES

- Set up and operate equipment, such as a roaster, dryer, and grinder, to process cocoa beans to make chocolate liquor
- Turn gas valves and electric switches to start and heat a roaster
- Set controls to adjust the temperature of the roaster
- Start a cracking and fanning machine to break and remove husks from roasted cocoa beans
- Start a conveyor to move dried beans to a grinding machine
- Turn valves to pump chocolate liquor to storage tanks
- Set up and operate equipment used to bake and coat color TV picture tubes
- Watch gauges and adjust controls to keep oven at a certain temperature
- Use handtools to adjust controls on a coating machine
- Dump coating ingredients into a hopper for mixing
- Order chemicals from a storage room
- Keep records of materials used to coat TV picture tubes
- Control an oven that preheats and glazes pottery
- Light gas jets of a drying oven
- Start pumps to pump glaze to spray guns in an oven
- Examine glazed ware for cracks, runs, and bumps
- Clean spraying ovens and replace spray nozzles, as necessary

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies that manufacture chocolate, including chocolate bars, from the cocoa bean
- Companies that make color TV sets or TV picture tubes
- Pottery and porcelain manufacturing firms

7474 FOLDING MACHINE SETUP OPERATOR

These workers set up and operate machines that cut, crease, fold, glue, or staple paper to make products such as envelopes, boxes, and business forms. They install gears, and other parts and adjust the machines for specific jobs. They perform trial runs to detect problems and may take the machines apart to repair or replace broken or worn parts. They then load them with paper, glue, and other necessary materials. They set the machine control, start the machines, and watch them operate. They also check finished products for defects.

SAMPLE WORK ACTIVITIES

- Set and operate one or more machines to:
 - . Make envelopes from rolls of paper
 - . Glue together paper sheets used as business forms
 - . Make boxes from paperboard
 - . Cut rolls of paperboard into carton blanks
- Select and install the specified die on the press bed of a machine
- Install gears, plungers, and rollers in the machine
- Turn setscrews to adjust machine feeding, folding, gumming, and sealing units
- Mount a roll of paperboard on the machine feed spindle, using a hoist
- Thread paperboard through the machine feed, tension, and rollers
- Fill machine glue containers and load the automatic stapler
- Set the speed of machine units
- Operate a machine for a trial run and measure the first product
- Take machines apart to repair or replace broken or worn parts, using hand or power tools
- Move guides, gears, and other controls to regulate the machine
- Watch machines run to detect any problems

HOURS OF WORK/TRAVEL

- Some of these jobs may require shift work.

SAMPLE PLACES OF WORK

- Box manufacturing plants
- Companies that make shotguns shell casings
- Industrial plants that make their own packaging materials
- Paper products firms
- Printing and publishing firms

7476 STILL, CLARIFYING, AND PRECIPITATING MACHINE SETUP OPERATORS

These people set up and operate equipment used to process liquid products. For example, some operate equipment to process milk, ice cream, and other dairy products. Others set up and operate equipment to produce chemicals for use in research or product development. They assemble, adjust, and repair machine units. They may measure and mix ingredients. They control the temperature, pressure, and flow rates of materials. They also watch meters and gauges to check process conditions, and may keep production records.

SAMPLE WORK ACTIVITIES

- Operate equipment to process milk, cream, and other dairy products
 - . Connect pipes between vats and processing equipment
 - . Assemble fittings, valves, bowls, plates, and other parts to equipment with wrenches
 - . Watch temperature and pressure gauges on equipment
 - . Turn valves to admit steam and water into pipes to pasteurize milk
 - . Test products during processing
- Operate equipment used to produce chemicals for research or development purposes
 - . Follow instructions from a chemist or engineer to make chemical products
 - . Set up chemical equipment, such as reactors, stills, separators, and blending tanks
 - . Turn valves to regulate equipment temperature, pressure, and flow rates
 - . Watch meters and gauges to check process conditions
 - . Mix chemical solutions for use in tests
 - . Prepare records and reports of tests results
 - . Use handtools to adjust and repair testing equipment

HOURS OF WORK/TRAVEL

- Some of these jobs may require shift work or weekend work.

SAMPLE PLACES OF WORK

- Chemical plants
- Dairies
- Firms that make plastic products
- Food processing plants

7477 CRUSHING AND GRINDING MACHINE SETUP OPERATORS

These workers set up and operate machines used to cut, grind, shape, and polish stone or glass. They select and install cutting wheel for the type of stone and the finish desired. Then they use handtools and measuring devices to adjust machine guides and stops that control the cut of the wheel. They move hand and foot controls to start the machine and regulate its action. While they are working, they may spread water on the surface of the stone or glass to look for puddles that indicate uneven areas.

SAMPLE WORK ACTIVITIES

- Set up and/or operate one or more machines to:
 - . Grind stone to a smooth finish
 - . Grind mirror edges
 - . Grind and polish glass counter dividers or shelves
 - . Cut finger grips into sliding glass doors
 - . Form pillars or columns from limestone or marble
 - . Cut grinding wheels to a specified size and finish
 - . Shape stone monuments
 - . Grind bowling balls to size
 - . Make lenses and other optical elements
- Select grinding wheels according to type of stone and finish desired
- Attach grinding wheels to machine spindles
- Guide a rotating wheel over the surface of the stone
- Turn sauses and levers to move grinding wheels into position
- Use wrenches, setscrews, and measuring tape to set guide rails and stops to control the cut of the grinding wheel
- Use a hoist to mount blocks of stone in machine holders
- Position mirror glass on machine platforms
- Press a pedal to start suction cups that lock workpieces in place
- Flip switches and turn valves to start machines and the flow of water to the edging wheel
- Watch puddles of water on a stone to detect uneven areas
- Feel workpieces to make sure they are smooth and even
- Wash stones, using a hose
- Cut designs by hand in parts of stone that cannot be cut by a machine, using aallet, chisel, and file
- Remove workpieces from machines and carry them to a rack
- Work under contract as an APPRENTICE MACHINE STONE POLISHER
- Work under contract as an APPRENTICE PRECISION-LENS GRINDER

HOURS OF WORK/TRAVEL

Some of these jobs may require shift work.

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SAMPLE PLACES OF WORK

- Mirror manufacturing plants
- Bowling ball manufacturers
- Companies that specialize in shaping marble and stone used to build structures

- Companies that produce lenses and other optical elements
- Companies that design and make products such as cemetery markers and marble trophies
- Companies that manufacture sliding glass doors
- Any industry that produces products made from glass or stone

7478 SLICING AND CUTTING MACHINE SETUP OPERATORS

These workers set up and operate equipment used to slice or cut materials. This may include materials such as plastic, wallboard, hides, paper, cardboard, stone, and glass. They follow work orders to determine the setup required, and use handtools and measuring devices to install and adjust machine attachments. They load materials in the machines, and move levers and other controls to regulate machine actions. They replace worn or damaged machine parts. They check finished products for defects, and may weigh or measure sample products.

SAMPLE WORK ACTIVITIES

- Set up and/or operate machines to:
 - . Cut animal hides
 - . Cut openings in envelopes
 - . Cut cardboard into tubes
 - . Cut rolls of paper into sheets to make paper tablets
 - . Cut rough blocks of stone to size
 - . Slit and cut wool blankets into battins
 - . Cut, punch, and grind rubber goods
 - . Cut eyeglass lenses to a specified shape and size
- Study work orders to determine the machine setup required
- Install machine cutting tools
- Adjust machine attachments, using gauges and handtools
- Operate machines for trial runs
- Place stacks of paper sheets onto machine beds
- Use a hoist to mount rolls of paper onto machines
- Thread paper or cardboard through machine units
- Fill machine containers with glue
- Mark dimensions on stone, using a rule and crayon
- Pull a lever to start machine cutters
- Measure and weigh sample products
- Check stock for rased edges and incomplete cuts
- Place finished stock on a conveyor
- Record the amount, type, and size of products produced
- Take equipment apart and repair or replace worn parts
- Grease and oil machinery and change dull knives

HOURS OF WORK/TRAVEL

- Many of these jobs involve work in a factory or plant. Shift work may be required.

SAMPLE PLACES OF WORK

- Factories or plants that produce products such as:
 - . Boots and shoes
 - . Brushes and brooms
 - . Building board
 - . Electrical equipment
 - . Glass
 - . Leather goods
 - . Optical goods
 - . Paper goods
 - . Rubber goods
 - . Stonework
- Printing and publishing companies

7479 MACHINE SETUP OPERATORS, MISCELLANEOUS

These workers set up and operate a variety of machines used in making or processing products. They read work orders for the machine setup; materials, and procedures to use. They install and adjust machine attachments and set controls that regulate the action of the machines. They may watch temperature or other displays and test, weigh, or measure finished products. They use handtools and measuring devices to set up the machines and may clean, repair, or replace parts. They also may load materials into machines to be processed.

SAMPLE WORK ACTIVITIES

- Control equipment used to remove dirt, oil, and scale from coils of metal
 - . Turn valves to add acid to processing tanks
 - . Install and adjust guides, rolls, and shears
 - . Use meters to check the dimensions of finished coils
- Set up and operate a machine to mold soft candies, such as sundaes and orange slices
 - . Watch temperature displays
 - . Start pumps to fill hoppers with materials
 - . Weigh formed candy
 - . Take machinery apart to steam clean it
- Operate a machine that deposits batter into baking pans on a moving conveyor
 - . Use a hoist to dump batter from mixing bowls
 - . Use handtools to install and adjust machine attachments
- Set up a machine to make building paper or insulation board
 - . Mount rolls of materials in machines, using a hoist
 - . Thread material through machine guides
 - . Watch gauges and move controls to operate machinery
 - . Compare sample products with standards
 - . Remove products from machines and stack them on shelves
- Control equipment used to spray tin and silver solutions on mirror glass
- Set up machines to measure and weigh gun cartridges
- Operate a machine that drills holes in glass and mirrors
- Operate a machine to regroove tire treads
- Set up equipment used to develop photographs
- Operate a machine to twist wire used to make brushes

HOURS OF WORK/TRAVEL

- Many of these jobs involve work in a factory or plant. Shift work may be required.

SAMPLE PLACES OF WORK

- Factories, plants, or businesses that produce or process products such as:
 - . Abrasive and polishing products
 - . Ammunition
 - . Bakery goods
 - . Brushes and brooms
 - . Building board
 - . Buttons
 - . Candy
 - . Canned goods and preserves
 - . Electrical equipment
 - . Electronics products
 - . Leather goods
 - . Mirrors
 - . Paper and paper products
 - . Pens and pencils
 - . Photographs
 - . Pottery and porcelain
 - . Rubber goods
 - . Wallpaper
 - . Wirework

75-76 MACHINE OPERATORS AND TENDERS

These workers operate or tend machines that process metal or plastic materials and products. They may install attachments, adjust controls, watch machine operation, and check finished workpieces for defects. They may clean machines and do minor repairs or change worn parts. They may run or tend machines that make metal or plastic products by molding, extruding, stamping, cutting, or welding. Others use machines to do finishing processes like buffing or plating.

751-2 METAL WORKING AND PLASTIC WORKING MACHINE OPERATORS AND TENDERS

These workers run machines that cut, shape, bore, or grind metal or plastic workpieces. They may set up and load machines that trace templates for watch parts or thread plastic tubes for flashlight covers. Others run machines that cut metal or plastic sheets to a specific size or shape metal by squeezing it through large cylinders. Workers may use machines to stamp patterns in metal or buff metal or jewels. They check workpieces and clean and replace machine parts.

7512 LATHE AND TURNING MACHINE OPERATORS AND TENDERS

These workers operate machines used to grind, bore, thread, or cut metal or plastic workpieces. They read blueprints or work orders, install and adjust the required cutting tools, and position the workpieces for machining. They may brush oil or abrasives on the cutting tools to help the cutting or grinding action. They move switches and other controls to advance the cutters and smooth the surfaces of the workpieces. They also may examine and measure finished pieces to see that requirements are met.

SAMPLE WORK ACTIVITIES

- Operate or tend machines to:
 - . Grind water parts to a specified thickness
 - . Bore and thread metal castings or bar stock
 - . Cut threads in artillery shells
 - . Cut metal parts for bomb fuses
 - . Cut grooves in plastic flashlight covers
 - . Prepare watch gear blanks for milling
 - . Polish metal parts
 - . Finish holes drilled in jewel bearings
- Read process sheets, blueprints, and sketches
- Install machine attachments
- Use precision gauges and instruments to adjust machine units
- Clean parts to be machined by dipping them in chemicals
- Spread oil and abrasive powder over grinding surfaces
- Brush lubricant on machine cutters
- Dip workpieces in diamond dust before machining them
- Use tweezers to position small parts in a machine for drilling
- Position metal stock on machines by hand
- Move buttons, switches, and other controls to regulate the action of a machine
- Move cutting tools against workpieces
- Inspect machined holes, using a magnifying glass
- Test the thickness of parts, using a meter

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories that produce fabricated metal products, transportation equipment, and machinery
- Production and maintenance departments of factories and plants
- Toolrooms and machine shops
- Clock and watch manufacturers
- Ammunition factories
- Companies that make plastic products
- Companies that make musical instruments

7513 MILLING AND PLANING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to cut, grind, or shape metal or plastic workpieces. They study blueprints or work tickets to determine the machining to be done. They install the required machine attachments, lift workpieces onto the machines, and move controls to regulate machine actions. They may then replace worn machine cutters and saw or melt stock to prepare it for grinding or casting. They also examine or measure finished work and clean the equipment and work area.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Cut recesses or teeth into watch parts
 - . Cut grooves in gun bores
 - . Cut Jewel settings to a specified thickness
 - . Cut excess metal from parts used in making products
 - . Grind metal stock into powder
 - . Cast metal parts
- Study blueprints or work orders to determine work to be done
- Install machine attachments
- Saw bar stock into sections
- Melt bars of metal in a melting pot and pour the molten metal into molds
- Dump metal cuttings into a grinding mill
- Lift workpieces onto machines by hand or using a hoist
- Move controls to operate and adjust machinery
- Turn controls to bring work into contact with machine cutting tools
- Watch a machine run to detect problems
- Change worn cutters, using wrenches
- Use gauges and other precision instruments to check work
- Examine finished work for scratches or other defects
- Keep production records
- Clean equipment and work areas

HOURS OF WORK/TRAVEL

These jobs may require shift work. Some may require weekend work as well.

SAMPLE PLACES OF WORK

- Factories that produce fabricated metal products, transportation equipment, or machinery in large amounts
- Production and maintenance departments of factories and plants
- Toolrooms and machine shops
- Clock and watch manufacturers
- Aircraft manufacturers
- Firearms manufacturers
- Companies that make cutlery and tools
- Printing and publishing companies

7514 PUNCHING AND SHEARING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to cut, and shape metal and plastic workpieces. They follow charts or other instructions to install machine attachments and adjust machine cutters and guides. They load or feed materials into the machines and press pedals and turn cranks to operate the machinery. They may guide workpieces along marked cutting lines to cut them into specified shapes. They check machined pieces for defects, and replace worn or broken machine parts as required. They also may operate conveyors and keep production records.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Prepare iron and steel cuttings
 - . Cut metal sheets into curved shapes
 - . Punch holes or layout marks in metal stock
 - . Remove burs from hot forged metal
 - . Cut lead wire into slugs used to make bullets
 - . Straighten and punch holes in strip metal
 - . Trim, punch, or shape plastic stock
 - . Cut sheets of plastic material into specified shapes
 - . Form pivot holes in watch parts
 - . Slit storage battery panels to size
- Read charts which list machine settings for each cut
- Install machine attachments
- Adjust machine cutters, using gauges, scales, or patterns
- Set machine stops and guides
- Lay out cutting lines on workpieces by tracing from a template
- Lift workpieces and position them on machine tables, using a hoist
- Shovel metal pieces into feed trays
- Feed rolls of metal through machine units
- Press pedals and turn cranks to operate a machine
- Guide workpieces along cutting lines to cut desired shapes
- Watch machine operations to detect problems
- Inspect finished metal pieces for defects
- Weigh sample products on scales
- Start conveyors
- Use handtools to replace worn or broken machine parts
- Stack finished workpieces on a handtruck
- Keep records of materials used and orders completed

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories that produce fabricated metal products, transportation equipment, or machinery in large amounts
- Production and maintenance departments of factories and plants
- Toolrooms and machine shops
- Companies that make wooden boxes
- Companies that make plastic products
- Clock and watch manufacturers
- Electrical equipment manufacturers

7515 EXTRUDING AND DRAWING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines that shape metal wire or strips by forcing the metal through special tools. They also may operate machines to cut, coat, or wrap coverings around wire cable. They form products such as metal eyeglass frames, bullets, jewelry, dental wire, and electrodes. They read job orders, install the proper tools and thread the metal wire or strips through the machine. They start the machine, watch it operate, and make adjustments when necessary. They may use precision measuring devices to check finished products for defects.

SAMPLE WORK ACTIVITIES

- Operate a wire drawing machine to process watch spring wire
- Read instructions that describe how wire should be processed
- Thread wire from a feeding roll through machine dies and onto a winding roll
- Keep production records
- Fasten dies on the bed of a machine press, using handtools
- Load coils of strip metal on the spindle of a machine
- Turn handwheels to close and tighten dies on a metal strip
- Cut pieces of metal into specified lengths, using an electric saw
- Operate a machine to shape wire to form pieces of jewelry
- Press a lever to lower a machine unit ram that forces lead through a machine die
- Tend a machine that coats and cuts wire to produce welding electrodes
- Tend a machine that shapes or forms metal tubing

HOURS OF WORK/TRAVEL

(No information)

SAMPLE PLACES OF WORK

- Jewelry manufacturers
- Plants that manufacture dental fixtures
- Watch and clock manufacturers
- Electrical equipment manufacturers
- Ammunition manufacturers

7516 ROLLING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines that shape metal by squeezing it through large rollers. Often, the metal is heated before it is shaped. They determine the work to be done and set machine stops, guides, and rolls accordingly. They load metal stock into the machine, move controls to regulate machine actions, and examine finished pieces for defects. They may also repair machine parts, clean the equipment and work area, operate conveyors, and keep processing records.

SAMPLE WORK ACTIVITIES

- Operate or tend equipment to:
 - . Roll hot steel ingots into slabs or beam blanks
 - . Wind steel strips into coils as it comes out from a rolling mill
 - . Straighten bent metal plates or bars
 - . Move steel rails and pipe from processing lines to cooling beds
 - . Remove wrinkles and creases from metal templates
 - . Roll metal ribbon into coils to make tubing
- Read work orders to determine work procedures
- Set machine stops, guides, and rolls for different sized stock
- Check the color of hot ingots to determine if they are ready for rolling
- Move controls to position metal on a conveyor and guide it into machine rolls
- Thread metal sheets between the rolls of a machine, using a crane
- Start, stop, and regulate the speed of machines
- Watch meters and gauges to determine if machines are operating correctly
- Measure sample beams to see if they meet standards
- Examine metal surfaces for defects
- Cut defects from steel strips, using power shears
- Help other workers repair or adjust roll line equipment
- Keep records of the number and type of objects processed
- Clean equipment and work areas

HOURS OF WORK/TRAVEL

- Many processes in the iron and steel industry are continuous. Therefore, workers in these jobs may work night shifts or on weekends.

SAMPLE PLACES OF WORK

- Iron and steel mills
- Jewelry manufacturers

7517 PRESS AND BRAKE MACHINE OPERATORS AND TENDERS

These people operate or tend machines that cut, shape, and form metal into objects. They mount metal pieces onto holding devices in the machines and move controls to regulate the action of the machines. They may hold metal pieces against machine tools while they are being shaped, or use a crane to position large workpieces against machine stops. They may also tend a machine that compresses metal powders to shape parts. Once the metal pieces are shaped, they examine, weigh, and/or measure them to see if they meet specifications.

SAMPLE WORK ACTIVITIES

- Tend machines that:
 - . Make impressions on a roll of wire
 - . Form angle iron used in making wooden boxes
 - . Cut, punch or stamp articles from sheets of blocks of materials
 - . Compress metal powders into parts like bearings, gears, and rings
 - . Make clockwork parts from powdered metal
 - . Shape the inside diameter of shotgun barrels
 - . Press metal bands into the grooved edges of tabletops
 - . Bend, punch, form, or straighten metal sheets, plates, or bars
- Mount rolls of wire on a spindle and thread the wire end through the machine
- Shift a lever to start the machine
- Use a crane to position work against machine stops
- Clamp blocks of material on the machine bed
- Hold a metal strip on the die of a machine while the machine ram passes over the metal to shape it
- Splice wire ends together when breaks occur
- Examine processed wire with a microscope to look for defects
- Use a gauge to measure the diameter of machine pieces
- Weigh finished parts on a scale
- Place finished parts on a tray
- Use an air hose to blow dirt from the machine die after each operation

HOURS OF WORK/TRAVEL

- Some of these jobs may require shift work.

SAMPLE PLACES OF WORK

- Ammunition manufacturing plants
- Firearms manufacturers
- Furniture manufacturers
- Metal parts manufacturers
- Plants that make wooden boxes

7518 DRILLING AND BORING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines that drill, ream (enlarge), or tap holes in metal objects. They select the proper sized cutting tools and fasten them in place on the machine. They lift workpieces onto the machine by hand or using a hoist, and secure them on the machine table. They move controls to feed the cutting tool into workpieces and to adjust the cutting speed, feed rate, and depth of cut. They watch cutting tools in operation and replace, sharpen, or reset them as necessary. They use gauges and other precision measuring devices to check finished work.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Remove burrs from the inside surfaces of copper bands
 - . Ream and mill drill holes in parts of musical instruments
 - . Tap holes in workpieces
 - . Position shell cases so that bullets can be inserted into them
 - . Bend the outside edges of bullets so that they can be filled with powder
 - . Bore holes in watch or clock parts
 - . Drill center holes in Jewel bearing blanks
 - . Cut and polish oilclips used in watches
- Select reaming or cutting tools of the desired size and secure them in place on machines
- Lift workpieces by hand or using a hoist and secure them on machine tables
- Move controls to adjust cutting speeds, feed rates, and depth of cut
- Move machine controls to feed tools into workpieces and to start automatic feeds
- Watch machines operate, and check drilled workpieces using fixed gauges, calipers, and micrometers
- Observe cutting tools in operation, and replace, sharpen, and reset them as necessary
- Stop machines when materials are improperly fed, machined, or thrown out
- Examine finished samples from machines for burrs, ragged edges, or scratches
- Check the accuracy of the milling with a gauge

HOURS OF WORK/TRAVEL

Many of these jobs involve work in a factory or plant. Shift work may be required.

SAMPLE PLACES OF WORK

- Clock and watch manufacturing plants
- Ammunition factories
- Firearms manufacturers
- Companies that make musical instruments
- Factories that produce fabricated metal products, transportation equipment, and machinery in large quantities
- Machine shops and toolrooms in the production and maintenance departments of plants

7519 FORGING MACHINE OPERATORS

These workers operate or tend machines used to flatten, compress, expand, or shape metal. These machines include power hammers, rollers, forges, and presses. They may heat the metal in a furnace before it is shaped. They adjust machine units, and then position and secure metal pieces in holding devices. They start the machines and watch for problems while they operate. Once pieces are shaped, they may use a template or some other measuring device to check them for defects.

SAMPLE WORK ACTIVITIES

- Reshape defective strips of metal, using a furnace and power hammer

- . Place strips of metal in a furnace to heat them to a certain color
- . Remove metal strips from a furnace and position them on the bed of a power hammer
- . Start a machine that pounds metal to a specified shape
- . Use a template to check the shape of finished pieces
- Operate a machine to flatten and taper the heated ends of metal strips
 - . Install dies (special tools) in the upper and lower plates of a machine
 - . Use wrenches and gauges to adjust the pressure of machine rollers
 - . Thread metal strips through the machine rollers
 - . Pull levers to operate the machine rollers
- Set up and operate machines to forge cold BB shot for air rifles
- Sharpen and shape machine cutoff tools, using a bench grinder
- Tend a machine to press designs into metal
- Tend a power hammer or power press that forges metal stock
- Tend a machine that expands pipe ends to certain sizes

HOURS OF WORK/TRAVEL

(No information)

SAMPLE PLACES OF WORK

- BB shot manufacturers
- Companies that manufacture metal products or parts
- Iron and steel mills

7522 GRINDING, ABRADING, BUFFING, AND POLISHING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines that grind, scrape, buff, or polish metal, glass, or jewels. Machines may be used to grind parts to size, sharpen tools or cutlery, or polish and finish products. Workers install machine attachments, set and adjust controls, and load or hold workpieces in the machine for processing. They also may heat metal pieces before they are machined. They watch indicators or gauges as pieces are worked and adjust controls. They also clean and oil the machinery and may keep work records.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Grind ore and scrap metal
 - . Sharpen large drills used in well-drilling or mining operations
 - . Trim and polish printing rollers
 - . Grind watch parts to size
 - . Sharpen tools such as axes and picks
 - . Buff car parts
 - . Smooth and polish shotgun bores
 - . Sharpen kitchen knives and small shop tools
 - . Level the edges of sheet glass
 - . Round the edges of pearl buttons
 - . Grind the inside walls of glass tubes
 - . Grind decorative grooves in steel knife blades
 - . Polish jewel bearings
- Clean workpieces before they are polished or grinded
- Mount machine attachments by hand or using a hoist
- Clamp workpieces in a holding device
- Start machinery
- Watch lights, dials, and gauges to adjust machine operations
- Brush abrasive paste onto grinding rods
- Adjust controls to regulate the feed rate and depth of cut
- Hold workpieces against a grinding wheel to sharpen cutting edges
- Heat tools and dip them in brine, oil, or water to harden them
- Watch parts as they are polished to detect signs of overheating
- Examine workpieces for rough spots, pinholes, and scratches
- Remove workpieces when the machine stops and measure them using a gauge

- Clean and oil machinery
- Use handtools to change worn grinding wheels
- Keep records of machinery breakdowns and repairs
- Keep production records

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories and plants that produce products such as:
 - . Abrasives and polishing products
 - . Buttons
 - . Clocks and watches
 - . Cutlery and tools
 - . Electrical equipment
 - . Firearms
 - . Glass products
 - . Machinery
 - . Mirrors
 - . Oil and fats
 - . Optical goods
 - . Pens and pencils
 - . Silverware
 - . Stoneware
 - . Textile products
 - . Transportation equipment
- Production and maintenance departments in factories and plants
- Toolrooms and machine shops
- Mining and quarrying companies
- Ore refineries

7529 METALWORKING AND PLASTIC WORKING MACHINE OPERATORS AND TENDERS, MISC.

These workers operate or tend machines that shape, fit, form, or condition metal and plastic materials. Sample work includes controlling equipment used to mix or remove impurities from metals. Some workers tend machines that straighten, polish, cut, or press holes in parts or products. Other work duties may include: loading materials adjusting controls, installing machine tools, and checking finished work for defects. They also may keep records of gauge readings, test results, or products processed.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Mix molten metal
 - . Wind metal scrap into balls
 - . Purify copper
 - . Cast lead into molds
 - . Cast railroad car wheels
 - . Straighten bent metal objects
 - . Smooth and polish plastic sheets
 - . Press holes in watch parts
 - . Rivet steel plates together
 - . Build and assemble metal hoods or boat hulls
- Use handtools to install machine tools
- Load materials into machines
- Adjust machine settings and controls
- Sort scrap metal parts by type of metal
- Move controls to pour hot metal mixers or molds
- Check, clean, and tighten electrical connections
- Watch temperature, flow, and pressure gauges to check machine operations
- Inspect pumps, motors, and valves
- Skim waste products from metal being refined, using a steel hoe
- Draw samples of gasses and fluids for lab tests
- Keep records of gauge readings and lab test results
- Follow layout marks to drill bolt holes in metal or plastic material
- Position workpieces in a machine
- Use precision measuring devices to check workpieces for defects
- Keep production and storage records
- Give directions to workers who clean equipment and weigh and store articles

- Check products for defect, such as scratches and cracks

HOURLS OF WORK/TRAVEL

- These people work in a variety of industries. Work hours may vary. Plant or factory workers may work on shifts. Workers in the iron and steel industry and other industries that involve continuous processes may work nights and weekends.

SAMPLE PLACES OF WORK

- Factories or plants that produce products such as:

- | | |
|--------------------------------|--------------------|
| • Ammunition | • Nuts and bolts |
| • Aircrafts and aircraft parts | • Optical goods |
| • Barrels | • Pens and pencils |
| • Buttons | • Plastics |
| • Canvas goods | • Plastic products |
| • Chemicals | • Rubber goods |
| • Clocks and watches | • Silverware |
| • Coke | • Smoking pipes |
| • Cutlery and tools | • Wire work |
| • Electrical equipment | • Wooden boxes |
| • Musical instruments | |

- Foundries
- Iron and steel mills
- Ore refineries
- Machine shops
- Farms

753 METAL FABRICATING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines that process metal products. They may operate welding machines that join metal or plastic by heating, then fusing it together. Others may solder or braze together parts for typewriters, watches, circuit boards, or aircraft. Some join metal or plastic parts with metal fasteners. Workers may install machine attachments, load machines, operate controls, and check finished workpieces.

7532 WELDING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to join metal or plastic parts. Typically heat is applied to join the pieces together. Workers read work orders, charts, or diagrams that describe the work to be done. They adjust the machines to handle objects of different sizes, load and position objects to be welded, and move controls to regulate machine actions and conditions. Once parts have been joined, they may examine or measure them to make sure standards are met.

SAMPLE WORK ACTIVITIES

- Operate welding machinery to:

• Assemble uranium fuel elements used in an atomic plant	• Parts
• Weld wires together to form long coils	• Make storage battery elements
• Seal plastic material to form products such as book covers or baby	• Join metal components such as crankshafts, machine parts, and railroad rails
- Read production schedules to determine the number and size of articles to be prepared

- Install and adjust machine fixtures and stops, using handtools and precision measuring devices
- Turn knobs to regulate the speed and timing of machine cycles
- Light torches, and turn gas and air valves to obtain flames of the right size and color
- Use handtools to adjust machine holding devices
- Use a crane to move large metal workpieces
- Thread wire through machine units
- Position parts to be welded into machine holding devices
- Press a pedal to start the welding cycle
- Type instructions to computers that control welding equipment
- Remove finished products from a machine and stack them on a rack or table
- Look at dial readings to detect problems
- Use precision measuring devices to check finished products
- Grease and adjust machine units before and after operations

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Chemical plants
 - Companies that make wire
 - Electrical equipment manufacturers
 - Companies that make products such as:
 - . Boilers
 - . Bulldozers
 - . Heavy machinery
 - . Ships
 - . Trucks
- Welding shops

7533 SOLDERING AND BRAZING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to solder, weld, braze, or harden metal parts. They join metal parts of products such as typewriters, watches, cars, aircraft, circuit boards, and jewelry. They follow work orders, sketches, blueprints, or charts. They position parts to be joined and adjust buttons, guides, and other devices to control the action of the machines. They may light and regulate furnaces or torches using electricity to bond or harden parts. They examine finished pieces for defects and discard defective ones.

SAMPLE WORK ACTIVITIES

- Tend a machine to harden or braze metal objects
 - . Position and fasten objects in the machine
 - . Press buttons on a control panel to light burners used to harden objects
 - . Watch a machine operate and remove finished objects
 - . Test objects or parts for hardness, using special testing equipment
 - . Stamp identifying ID marks on objects, using a hammer and punch
- Tend a machine to solder typewriter type to type bars
 - . Clamp parts to be soldered onto a holding plate
 - . Adjust machine guides for different styles of type
 - . Select, arrange, and position type to be soldered
 - . Use a pencil-flame torch and fire to remove excess solder from parts
 - . Press a treadle to move finished assemblies to the next station
- Operate an electric, gas, or oil furnace to braze or solder metal parts

- . Select torch tips, according to the type and thickness of metal to be brazed
- . Load reels of brazing wire into a machine

- . Connect hoses from oxygen and fuel supplies to regulator valves and torches
- . Observe gauges that indicate the flow of gas into machine chambers

HOURS OF WORK/TRAVEL

- Generally, these jobs involve a 35-40 hour work week. However, shift work may be required in some jobs.

SAMPLE PLACES OF WORK

- Manufacturing companies that produce products assembled from metal parts
- Welding, soldering, or brazing shops

7539 FABRICATING MACHINE OPERATORS AND TENDERS, MISCELLANEOUS

These workers operate or tend machines used to make or form products from metal or plastic. These products include: barbed wire, metal springs, furniture, bullets, glass frames, and zipper parts. They may use one or more machines. They load materials in the machines and may adjust or set machine controls. They flip switches, press pedals, or move other controls to operate the machines. Once the products have been formed, they may examine or measure them.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Make barbed wire
 - . Cut, bend, and couple wire links to form mesh mattress supports
 - . Rivet metal furniture parts together
 - . Shape metal stock to form points for mechanical pencils
 - . Form lead wire into bullets
 - . Secure lenses in plastic sunglasses
 - . Attach metal bindings to tools
 - . Cut and form zipper parts
 - . Stretch aircraft control cables to specified lengths
 - . Wind, shape, or finish metal springs
- Hoist reels of wire onto machine feed racks
- Position stock in the holding device of a machine
- Thread wire through machine pulleys and feeds
- Use handtools to adjust setscrews in machines
- Start machines and watch them operate to detect problems, such as jamming
- Press pedals to operate units that stamp out metal forms
- Watch counters to check the length of wire on rolls
- Cut wire with a cutter
- Check the weight and dimensions of products, using a balance scale and fixed gauges
- Check completed articles for cracks or other flaws
- Attach name tags to finished rolls of wire
- Keep records of items produced and rejected

HOURS OF WORK/TRAVEL

- Many factories operate on an 8 hour shift schedule. Shift work may be required in some of these jobs.

SAMPLE PLACES OF WORK

- Factories, plants or shops that make products such as:

- . Aircraft and aircraft parts
- . Bedsprings
- . Clocks and watches
- . Concrete products
- . Cutlery and tools
- . Electrical equipment
- . Furniture
- . Machinery
- . Nails
- . Needles and pins
- . Plastic products
- . Rubber goods
- . Tools

- Construction companies

754 METAL AND PLASTIC PROCESSING MACHINE OPERATORS AND TENDERS

These workers operate machines that process metal or plastic products. They may run machines that mold or cast such products as shotgun shells, pig iron, and contact lenses. They may tend machines that plate or coat products with metal to build up, decorate, or protect the item. Some tend furnaces that harden, strengthen, or refine metal or melt ore. Workers install attachments, load machines, adjust controls, watch operations, and check finished work.

7542 MOLDING AND CASTING MACHINE OPERATORS AND TENDERS

These people operate or tend machines used to mold or cast metal, plastic, or glass products. These products include: bullets, glass tubes, iron billits, contact lenses, and a variety of other products. They also may control equipment used to heat, melt, or cure materials before they are molded or cast. Generally, they follow blueprints or work orders. They watch meters and adjust machine controls. They may weigh and mix materials, install machine attachments, and test or measure finished products. They also may clean machinery or parts.

SAMPLE WORK ACTIVITIES

- Operate or tend equipment to:

- . Melt metal scrap to form shot for shotgun shells
- . Melt and cast lead for use in bullets
- . Pour molten iron into molds to cast pig iron
- . Form sand molds used in making metal castings
- . Cure plastic parts
- . Mold plastic sheets into products
- . Blend metal powders with diamonds
- . Cast plastic contact lenses
- . Follow blueprints and work orders
- . Install machine dies, using handtools
- . Weigh ingredients and dump them in a mixing machine
- . Start conveyors that position molds under a spout
- . Move controls to pour molten metal from a ladle into molds
- . Mix plaster and water in a mixing machine
- . Glue molds together
- . Load plastic sheets into a machine and remove formed products
- . Push a cart containing parts into a curing oven
- . Watch meter readings and adjust controls to regulate machine temperature or pressure
- . Check finished articles for defects, such as irregular size or impurities
- . Clean equipment, using an airhose
- . Repair and replace equipment parts

HOUR OF WORK/TRAVEL

91

- Many of these jobs may require shift work. Workers involved in continuous processes also may work weekends.

SAMPLE PLACES OF WORK

- Factories, plants or shops that make:

- . Ammunition
- . Electrical equipment
- . Eyeglasses and contact lenses
- . Jewelry

- . Machinery
- . Phonographs
- . Plastic products
- . Tools and instruments

- Ore refineries and processing plants
- Iron and steel mills
- Printing and publishing companies
- Foundries

7543 PLATING AND COATING MACHINE OPERATORS AND TENDERS

These people operate and tend machines that coat or cover objects with metal, plastic, or other materials, to build up, protect, or decorate their surfaces. These workers start, stop, and control machines by adjusting controls. Some fill machine units with coating materials and then dump or dip objects to coat or plate them. Some use electric current to bond coating materials. These workers watch gauges or feel, examine, or measure coatings to make sure they are the right thickness.

SAMPLE WORK ACTIVITIES

- Operate equipment to coat objects with metal to build up their surfaces
- Place metal objects in the barrel of a plating machine
- Turn a handle to lower metal objects into a plating solution
- Rinse plated objects and dry them in a tumbler filled with sawdust
- Tend equipment that carries metal objects through a series of solutions to clean and decorate them
- Add measured amounts of water and other materials to a plating solution
- Watch gauges and turn steam valves to keep a rinsing bath at the right temperature
- Plate phonograph records with metal
- Turn valves to fill a machine tank with a zinc solution used to coat wires
- Adjust controls to regulate the flow of current in plating machines
- Dip objects in a dye bath to color them
- Use a micrometer to measure the thickness of coatings on wires
- Tend equipment used to coat nuts and bolts with metal to protect them
- Load tin solder into equipment used to coat springs for relays and switches
- Tend equipment that cleans, coats, and dries baking pans
- Mix cleaning and glazing solutions, according to a formula
- Spray enamel on bathtubs and sinks
- Wheel sinks into a furnace before and after they are sprayed with enamel
- Use an air hose to blow away excess ceramic on objects that have just been coated
- Use a rough wheel to grind and shape porcelain into the shape of a tooth
- Tend a machine that applies paint to metal tubes used to package toothpaste or glue
- Spray the back of mirror glass with a silver or copper solution

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories that use or make metal parts which need protection from rust, such as aircraft wings, silverware, and car bumpers
- Companies that make phonograph records
- Companies that make objects such as buckets and nails
- Dental laboratories
- Tin Roofing
- Factories that make plumbing fixtures and equipment
- Electric light bulb manufacturers

- Companies that make or use tubes for holding products such as toothpaste, glue, and shampoo
- Plants that manufacture mirrors
- Companies that provide plating or coating services for a fee
- Electronic equipment manufacturers
- Companies that make, repair, or use products that are coated with rubber or plastic
- Companies that make buttons or belt buckles
- Jewelry manufacturers
- Any industry that produces products which have parts that are coated or plated

7544 HEATING EQUIPMENT OPERATORS AND TENDERS

These workers control furnaces used to harden, refine, or strengthen metal objects or to melt ore or metal. They adjust controls to bring the furnace to the required temperature. They then load the metal into the furnace by hand, or by using a metal basket or skids. They determine when the metal has reached the correct temperature by observing its color and the furnace's temperature gauge. After a specified time, they remove the hot metal from the oven, using tongs or mechanical devices. They may then quench the metal in water, oil, or other baths.

SAMPLE WORK ACTIVITIES

- Control one or more furnaces to:
 - . Harden, toughen, or temper watch parts
 - . Change the chemical properties of metal objects
 - . Soften and refine the grain of metal objects
 - . Rust-proof gun parts and give them a blue finish
 - . Soften jewelry fittings to prepare them for further processing
 - . Produce different types of steel
 - . Refine or melt ore or metal
- Use charts to determine the temperature, heating time, and type of baths to set metal to a specified hardness
- Spray parts with steam to remove grease, grit, and dirt
- Adjust controls to bring furnaces to desired temperature
- Place baskets of metal parts into heated furnaces
- Place parts in the barrel of a furnace and cover them with bone chips and pine tar oil
- Toss objects directly into furnaces
- Signal workers to position steel on furnace skids
- Move controls to push steel from skid into a furnace
- Watch the inside of a furnace on a TV screen and move controls to position metal objects in the furnace
- Quench hot metal parts in water, oil, brine, or other baths
- Move a lever to rotate furnace barrels
- Check the shade and color of parts
- Obtain samples of metal from a furnace, using a long-handled spoon
- Help other workers clean furnaces

HOURS OF WORK/TRAVEL

- Some of these jobs may require shift work. Workers in iron and steel mills and other places involved in continuous processes may be required to work on weekends.

SAMPLE PLACES OF WORK

- Shops that make and sell forgings (treated metals)
- Plants that use forgings in their final product, such as manufacturers of:
 - . Automobiles
 - . Clock and watches
 - . Electrical equipment
 - . Farm equipment
 - . Handtools
- Iron and steel mills

- Metalworking Plants
- Hammersmith shops

7549 METAL AND PLASTIC PROCESSING MACHINE OPERATORS AND TENDERS, MISC.

These people operate or tend equipment used to clean, coat, or otherwise process products or materials. For example, some clean objects and coat them with wax or a plating solution. Some use chemicals to clean grease and dirt from metal objects to prepare them for processing. They move controls to regulate the machines, and may read gauges and meters. They may load objects or materials into containers for processing. They may examine, test, or measure products or materials. They may also use handtools to install and adjust machine units.

SAMPLE WORK ACTIVITIES

- Tend tanks used to clean bullets and coat them with wax
 - . Dip containers of bullets in solvent to remove chips and grease
 - . Dip bullets into molten wax
 - . Start a blower to dry the wax on the bullets
 - . Examine bullets for defects, such as dents and blunted ends
 - . Start a conveyor to dump bullets into boxes
 - . Test coating solutions, using a special meter
- Tend baths used to plate phonograph records
 - . Draw samples of plating solutions from tanks, using a pipette
 - . Test the strength of plating solutions
 - . Read meters to test electrical connections
- Tend equipment that cleans and dries metal parts
 - . Load parts into a hopper by hand or with hoist
 - . Turn steam and water valves
 - . Read gauges to regulate the temperature and level of cleaning solutions
 - . Add chemicals to solutions
- Tend equipment that uses chemicals to clean grease, scale, and dirt from metal objects
 - . Use an airhose to remove shavings, dirt, and rust spots from objects
 - . Load objects on a conveyor that carries them through a series of chemical and rinsing baths
 - . Drain, clean, and refill chemical tanks
- Operate machines to process metals used in dental fillings
 - . Cut metal into chips of a uniform size, using a lathe
 - . Pour chips into the hopper of a grinder
- Operate equipment to recover dust from ore processed in a copper refinery
 - . Inspect and clean equipment, such as hoppers, air chambers, and safety switches
 - . Adjust and tighten belts on motors, using handtools
- Operate equipment to process wood pulp into cellulose
- Tend a variety of machines that form and prepare display screens for color TV picture tubes
 - . Feed screens through a series of rollers to flatten them
 - . Place display screens on a conveyor leading through cleaning, drying, and coating operations

HOURLY WORK/TRAVEL

- Many of these jobs may require shift work.

SAMPLE PLACES OF WORK

- Factories, plants or shops that make:
 - . Ammunition
 - . Electronic products
 - . Firearms and weapons
 - . Phonograph records
 - . Plastics or plastic products
 - . Refrigeration equipment
 - . Stonework
- Iron and steel mills
- Ore refineries

763 WOODWORKING MACHINE OPERATORS AND TENDERS

These workers operate woodworking machines such as lathes, routers, jointers, planers, and sanders. They may control wood as it is turned and shaped for furniture. They may use machines that plane or trim lumber or wood while others sand wood to remove dirt and rough surfaces. Workers may also operate machines that nail or tack wood pieces together for such products as picture frames. Workers adjust machines, run wood through the process, and check finished work.

7631 LATHE AND TURNING MACHINE OPERATORS AND TENDERS

People in these jobs operate or tend machines that turn and shape wood. They make wood products such as barrels, kegs, gun stocks, and pipe bowls. They must follow blueprints or drawings to lay out cutting lines on wooden stock. They also use measuring devices.

SAMPLE WORK ACTIVITIES

- Use a chisel or boring tool to carve designs and shapes into a piece of wood that is turning on a lathe
- Lay out cutting lines on a piece of wooden stock, following a drawing or blueprint
- Smooth and clean the inside surface of a wooden barrel, using a lathe or woodworking machine
- Cut grooves in a wooden stock to shape parts for rifles and shotguns
- Measure pieces of wood, using a rule and calipers
- Peel, trim, and shape poles on a lathe to form boat masts
- Cut and shape pipe bowls out of corn cob, using a high-speed lathe or woodturning machine

HOURS OF WORK/TRAVEL

- These jobs do not require travel
- Generally, these jobs involve a standard 35-40 hour work week. However, shiftwork may be required in some jobs.

SAMPLE PLACES OF WORK

- Companies that make rifles or shotguns
- Factories or shops that do woodworking or make wooden poles or masts
- Businesses that make wooden barrels or buckets
- Companies that make smoking pipes

7632 ROUTER AND PLANER MACHINE OPERATORS AND TENDERS

These people operate or tend machines used to shape, plane, and trim planks, timber, and woodstock. They read work orders and install the required bits, cutters, rollers, and punches in the machines. They also adjust machine jigs, guides, and stops to control the depth and length of cut. They may clamp workpieces in a holding device or slide them against a machine guide. They start the machines, watch them operate, and check finished work for defects. They use handtools and measuring devices to adjust and replace machine parts.

SAMPLE WORK ACTIVITIES

- Operate a router to cut notches for joints in the edges of woodstock
 - . Select, install, and space bits on the spindle of a machine
 - . Use a rule and wrench to align machine jigs, guides, and stops
 - . Press a button to start the machine
 - . Insert stock against a machine sideslide and press a pedal to force the stock through cutting bits
- Operate a planer to shape and finish planks and timber
 - . Install cutting heads in the machine and adjust the blade for depth of cut
 - . Start the machine, exhaust blower, and conveyors
 - . Slide timber against a guide on feed rolls
 - . Use a gauge or rule to check the dimensions of sized stock
- Operate a variety of machines to trim, bore, incise, and date stamp railroad ties and utility pole crossarms
 - . Adjust stops and guides on the machine
 - . Install dating punches, boring bits, cutters, rollers, and knives according to a work order
 - . Remove defective material from the conveyor before it reaches the machine
 - . Replace worn or broken drills, cutters, and other parts, using handtools
- Operate a woodworking machine to rout, mill, and drill gunstocks to prepare them for metal parts
 - . Clamp gunstock blanks in the holding fixture on the machine
 - . Turn a crank to feed workpieces into a series of routing bits and cutters
 - . Check finished work by fitting metal gun parts into the prepared spaces

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Businesses that do woodworking or make utility poles or railroad ties
- Companies that make guns and other firearms
- Lumber factories or mills

7633 SAWING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to saw wood to size or to make parts or products. They may begin by measuring and marking the wood to be cut. They also may examine stock for defects or to determine the best cuts to be made. They adjust machine stops, guides, and blades before each sawing operation. They operate the machines by pressing controls to start, position, and stop the cutting blades and advance or position the stock. They may also guide stock into the cutting teeth by hand. They may unload, sort, stack, and measure woodstock and sharpen or replace worn saw blades.

SAMPLE WORK ACTIVITIES

- Operate or tend machines to:
 - . Cut lumber to size
 - . Saw logs to specified lengths
 - . Cut gates into window jams
 - . Saw wooden blocks into shingles
 - . Saw curved designs on woodstock
 - . Cut wood into boards used to make buckets and tubs
 - . Trim the corners of wooden boxes
 - . Bend, groove, and miter woodstock
 - . Cut parts for toys and games
 - . Round the ends of posts and rails
- Inspect lumber stock for defects
- Examine wood to determine which cuts will produce the highest grade
- Measure and mark lumber to be cut, using a rule and square
- Stack pieces of woodstock on a cutting table
- Adjust stops on saws
- Turn handwheels to adjust machine beds and blade guides
- Push lumber past a saw to cut away undesired parts
- Press a button to lower a saw that trims log ends
- Pull levers to feed stock into circular saws
- Push a cutting table against a saw until stock is cut
- Climb onto a conveyor to lift and remove jammed lumber
- Grade wood according to knots, rot, or other defects
- Sort and guide planks coming from a saw
- Use a template to check cut stock
- Sort cut lumber according to grade
- Measure completed cuts for accuracy, using a rule
- Pile trimmed boxes on a handtruck
- Sharpen and adjust the teeth of woodworking saws
- Replace worn saw blades
- Unload logs from trucks at a sawmill

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Woodworking shops
- Sawmills and lumber yards
- Planing mills
- Construction companies
- Factories, plants, or shops that make:
 - . Barrels
 - . Basketry
 - . Cork products
 - . Furniture
 - . Paper and pulp
 - . Smoking pipes

7634 SANDING MACHINE OPERATORS AND TENDERS

These people operate and tend machines used to rough, smooth, or clean wooden surfaces. For example, they may operate a sanding machine to smooth surfaces on wood furniture, remove excess glue and lead from pencils, or clean and shape parts of smoking pipes. They control the machines by turning handwheels and pushing buttons, pedals, or levers. They also may use handtools to position or replace machine parts. Many workers perform other tasks, as required by specific jobs.

SAMPLE WORK ACTIVITIES

- Turn handwheels to set the tension of a sanding belt
- Position articles to be sanded on a machine table
- Feel sanded articles to see if they are smooth
- Tend a machine that grinds cork into the shape of fishing rods

- Replace worn sanding belts, using hand tools
- Tend a sanding wheel to smooth wooden shoes to a certain finish
- Turn handwheels to set the distance between a feeder unit and sanders on a machine
- Place blank pencils in the hopper of a machine that sands wooden pencils
- Clean sanding machines with an airhose
- Operate a machine that removes bark and knots from pieces of wood
- Operate a lathe to remove tool marks from wooden parts
- Attach sandpaper to sanders
- Hold wooden stock against a sanding head or belt
- Hold a smoking pipe against a rotating disk to shape or smooth the pipe's stem
- Attach a sanding belt to machine rollers

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Woodworking shops
- Companies that make boots and shoes, and wooden shoe products such as shoe trees
- Companies that make wooden pencils, smoking pipes, or wooden buckets or boxes
- Companies that make products out of cork
- Sports equipment manufacturers
- Companies that produce wood veneer and plywood
- Any business or industry that makes large numbers of products using wood

7635 SHAPING AND JOINING MACHINE OPERATORS AND TENDERS

These people operate or tend machines used to shape or join wooden workpieces. For example, they may form fuel logs from sawdust, shape parts for furniture or press glued parts together to form doors. They adjust the machines as required and mount, load, or dump wood pieces in the machines to be shaped. They then move levers and other controls to regulate machine actions. They may also slide woodstock under a knife while it is being cut. They examine finished workpieces for defects, and may clean and oil the machinery.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Compress sawdust into fuel logs
 - . Bend woodstock to form parts for furniture or sports equipment
 - . Mold ground cork into slabs
 - . Clip sheets of veneer to a specified size
 - . Cut shapes into wooden handles used on forks or shovels
 - . Shape wooden blocks to form pencils
 - . Slice boards into slots used in porch shades
 - . Shape wooden blocks into shingles
 - . Cut strips of wood for use as basket slats
 - . Press glued wooden parts together to assemble products
- Weigh wood mixtures and dump them into molds
- Lubricate molds to prevent mixtures from sticking, using oil-soaked rags
- Move molds under a hydraulic press, using a chain hoist
- Push molds into an oven
- Watch gauges and regulate oven temperatures
- Remove the mold from the oven after a specified time
- Weigh sample products to see if they meet set standards
- Lift sheets of veneer onto machine feed tables
- Place steamed woodstock under machine rollers to bend it to a specified shape
- Push buttons, press pedals, or move levers to start machine cutters
- Set machines to cut woodstock to a specified length
- Slide stock under a chopper knife until it is clipped to size
- Stack finished products onto handtrucks
- Clean and oil machinery, using an airhose and grease gun
- Keep production records

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Manufacturing plants that use wood in their final products, such as those that produce:
 - . Cork, plywood, and veneer products
 - . Fuel logs and briquettes
 - . Pens and pencils
 - . Window shades and fixtures
 - . Wooden baskets, barrels, and boxes
- Sawmills
- Woodworking shops
- Wood preserving industries

7636 NAILING AND TACKING MACHINE OPERATORS AND TENDERS

These workers operate and tend machines that join parts of wooden products with nails, tacks, staples, or other fasteners. For example, some tend a nailing machine to join picture frames or attach trimmings to wooden stock. Others tend machines that staple basket hoops and slats together. These workers position and tighten machine parts, start and stop the machine, position work pieces to be joined, and adjust machine controls. They may use hand tools, such as wrenches, to adjust machine parts.

SAMPLE WORK ACTIVITIES

- Tend a machine that cuts metal fasteners from metal and drives the fasteners across the joints of boards
- Position metal strippings onto machine spindles
- Use a wrench to tighten the driver head of a machine
- Position work pieces against the machine table stop and press a pedal to start the machine
- Tend a machine that joins picture frames
- Pull nail wires through rollers into a driving device on the machine
- Turn knobs to adjust the machine to cut nails of a certain length
- Push pedals so that the machine will drive nails into wooden stock
- Tend a nailing machine that attaches wooden or plastic heels to shoes
- Push knobs to load a nail driving device with nails from a hopper

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies that make or repair nonleather boots and shoes
- Woodworking shops
- Basket factories
- Any business or industry that makes or repairs wooden products that must be nailed, tacked or stapled together

7639 WOODWORKING MACHINE OPERATORS AND TENDERS, MISCELLANEOUS

These workers operate or tend machines used to cut, shape, bore, mix, or treat wood pieces or materials. Some workers tend machines that mix wood chips and glue to make building board, heat wood to distill it or remove dampness. They may coat or treat wood with preservatives or fireproof solutions. They may shape wood into rifle stocks or pipe bowls or other items. These workers follow work orders and charts. They adjust machine settings, load materials into the machines, and watch for problems with machine operations.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Distill wood
 - . Make ground cork
 - . Treat phone poles or railroad ties with a fireproofing solution
 - . Heat wood to remove dampness
 - . Coat picture frame moldings with a glossy base
 - . Treat wooden pencils with dye, oil, and wax
 - . Dry and polish clothespins
 - . Bond wooden parts together
 - . Shred wood to make packaging material
 - . Make soft club heads
 - . Cut grooves on gun grips
 - . Form furniture parts
 - . Direct wood blocks to saws, washers, and chippers
- Use wrenches and hammers to adjust machine clamps
- Turn handwheels to adjust machine feed rollers
- Position parts on the bend of a machine
- Turn valves to supply fuel to burners
- Start pumps that move materials
- Shovel or dump materials into a machine hopper
- Use a power hoist to load and unload products
- Fill machine chambers with a coating mixture
- Turn switches and valves to pump solutions from a tank
- Watch gauges and adjust valves to regulate machine conditions and actions
- Take samples of materials for lab tests
- Feel or weigh materials to determine their moisture content
- Inspect finished products for defects
- Keep records of operations

HOUR OF WORK/TRAVEL

- Some of these jobs may involve shift work.

SAMPLE PLACES OF WORK

- Factories, plants, or shops that make:
 - . Barrels
 - . Basketry
 - . Brushes and brooms
 - . Building board
 - . Cork products
 - . Firearms
 - . Furniture
 - . Mirror and picture frames
 - . Packing materials
 - . Paper and pulp
 - . Shoe lasts and related forms
 - . Smoking pipes
 - . Veneer and plywood
 - . Window shades and fixtures
 - . Wooden boxes
- Sawmills
- Wood distilleries
- Woodworking shops
- Planing mills
- Utility companies

764 PRINTING MACHINE OPERATORS AND TENDERS

These workers run machines that perform printing operations. They may operate machines that set type, either by the line or into a computer which can set an entire page. They may run machines that print designs or colors, emboss business cards, or copy drawings. They may set up and load machines that make plates for printing pictures, repair books or magazines, or fasten wire bindings to notebooks. They watch machine operations and check its work.

7642 TYPESETTING AND COMPOSING MACHINE OPERATORS AND TENDERS

These workers operate machines to prepare material to be printed in publications. Some operate keyboard machines to assemble and set type. They press keys to select letters. The machine produces metal molds of letters and assembles them into lines of words. Some machines produce coded paper tapes or films to prepare type for printing. Others enter information into a computer that prepares entire pages of type. These workers also may arrange columns of type and pictures according to the desired layout of each page.

SAMPLE WORK ACTIVITIES

- Adjust the margins on a keyboard machine
- Read copy and press keys to select letters to be assembled into words
- Select and install banks of keys, according to the size and style of type desired
- Install rolls of paper strip into keyboard machines
- Type on a keyboard to punch holes in paper tape that will be used to control the casting of type
- Set up and operate a machine used to transfer information from a magnetic tape into print or film
- Turn dials to adjust the line spacing a machine produces
- Type command codes into a computer to set the size and style of type and width of margins for printed matter
- Load rolls of paper or film into a camera in a machine
- Use handtools to adjust a typesetting machine
- Transfer lines of type to a table for proofing
- Tend a machine that prints type and headings onto film or photographic paper
- Move levers to expose letters on film or paper

HOURS OF WORK/TRAVEL

- These workers may sometimes be required to work overtime to meet publication deadlines.
- Some workers in these jobs regularly work evenings, or night shifts.
- Workers in these jobs who are employed by newspapers may work during holidays and weekends.

SAMPLE PLACES OF WORK

- Newspaper plants
- Commercial printing companies
- Publishing companies
- Banks, insurance companies, advertising agencies, manufacturers, and other firms that do their own printing

7643 PRINTING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to print information or designs on other products. They also may copy, proof, or assemble printed matter. They load the machines with paper or other material, set machine controls, and watch the machines operate. They may mix chemical solutions, fill ink wells, and install and adjust machine attachments. They also check printed products for defects, and may pack finished work in cartons or boxes.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Print serial numbers on gun parts
 - . Print shoe and garment size, lot, and style numbers on boxes
 - . Print designs on leather articles or watch cases
 - . Print colors and designs on floor covering
 - . Print numbers and lines on folding rulers
 - . Print price information on tags or labels
 - . Type stencils and photo offsets
 - . Copy graphs and drawings
 - . Assemble pages of printed material in numerical order
 - . Emboss margins on business cards
 - . Make proofs of type setups
 - . Reproduce typed material
 - . Print colors or designs on wrapping paper
 - . Make negatives for use in offset printing
- Install and adjust machine attachments
- Mount printing plates in a press
- Hoist rolls of stock paper onto a machine
- Apply chemical agents to printing plates
- Thread paper through machine rollers
- Mix chemical solutions used to develop film
- Fill ink wells with specified colors of ink
- Load stacks of cards into a machine feeder
- Place type setups on the bed of a press
- Move controls to set a machine for the size and thickness of paper
- Push buttons to start and stop a machine
- Press a pedal to move an ink roller over the face of type
- Cut, form, sew, and glue materials to make books
- Watch machines operate to detect problems
- Inspect printed matter for defects, such as dirt spots, dents, and nicks
- Pack finished articles in cartons
- Clean printing plates after use, using type cleaner
- Work under contract as an APPRENTICE while learning to proof typeset

HOURS OF WORK/TRAVEL

- These jobs may require shift work.

SAMPLE PLACES OF WORK

- Commercial printing shops
- Book and magazine publishers
- Newspaper plants
- Banks, insurance companies, and other places that do their own printing
- Federal, State, and Local government agencies
- Manufacturing companies, such as those that produce:
 - . Boots and shoes
 - . Firearms
 - . Garments
 - . Glass products
 - . Hats and caps
 - . Household furniture
 - . Jewelry cases
 - . Paper goods
 - . Pens and pencils
 - . Rubber goods
 - . Textiles
 - . Tinware

7644 PHOTOENGRAVING AND LITHOGRAPHING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to prepare printing plates and rollers. They may also use machines to print patterns or designs on products. They set machine controls, install and adjust attachments, and load and unload materials onto and from the machines. They may use cameras and film processing equipment to photograph and develop negatives of designs or typed matter to be transferred to printing plates. They may also cut, trim, mount, or otherwise finish printing plates or related devices.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Set type
 - . Copy designs from film onto printing rollers
 - . Roughen (grain) metal sheets used in offset printing
 - . Mount printing plates onto wood or metal blocks
 - . Make blueprints of printed material,
 - such as documents or drawings
 - . Cut excess metal from printing plates
 - . Coat printing rollers with varnish
 - . Brush a color mix through stencils to make patterns on floor covering
 - . Print information on pieces of cloth
- Use a wrench to change machine gears
- Tighten setscrews to secure printing plates in a machine
- Set control switches on a computer used to set type
- Adjust and oil blades, scrapers, and brushes
- Operate a lifting device to load materials onto a machine
- Brush chemicals on a printing plate
- Watch machines to make sure that they operating correctly
- Operate a camera to photograph printed material
- Mount material to be photographed on a copy board
- Focus cameras to enlarge or reduce the size of objects in photographs
- Process exposed film through a series of chemical baths to develop, fix, and rinse the film
- Compute machine settings required to copy designs on film.
- Expose printing plates and photo prints to a bright light to transfer pictures to printing plates
- Operate power shears to cut sheets of metal to size
- Hammer used plates to remove marks, dents, and bent corners
- Check finished plates with a magnifier
- Clean out clogged stencils, using a brush and scraper
- Work under contract as an APPRENTICE while learning to prepare printing plates

HOURS OF WORK/TRAVEL

- These jobs generally involve a regular 8-hour work day. However, some jobs may require some overtime. Some jobs may require shift work.

SAMPLE PLACES OF WORK

- Commercial printing plants
- Newspapers
- Book and magazine companies
- U.S. Government printing plants
- Photoengraving shops
- Manufacturing firms that produce printed products such as:
 - . Floor covering
 - . Printing equipment
 - . Textile products

7649 PRINTING MACHINE OPERATORS AND TENDERS, N.E.C.

These people operate or tend machines used to assemble or repair books, magazines, and other printed material. Some workers tend machines that assemble, glue, and fold sheets of paper to make business forms. Others tend machines used to repair stitching in books, fasten wire bindings in notebooks, or remove faulty printing from paper products. They may install machine attachments, set machine controls, load machines with materials, and clear machine jams. They also check finished products for defects and may keep production records.

SAMPLE WORK ACTIVITIES

- Tend a machine that assembles, glues, folds, and cuts business forms and carbon inserts
 - . Set machine controls, according to the number of sheets to be assembled
 - . Feed sheets into the machine
 - . Stack completed sets of forms
- Tend a stitching machine used to repair magazines, comic books, or catalogs
 - . Place open books over a machine fixture (holding device)
 - . Determine where books or magazines need stitching and position them in the machine accordingly
 - . Press a pedal to start the machine
 - . and insert missing stitches
 - . Stack stitched books on a worktable to be removed
 - . Examine books to determine whether they are worth repairing
- Tend a machine that bounds pages to form books
 - . Install machine attachments
 - . Feed book bodies into the feed holder of the machine
- Tend a machine that fastens wire bindings in the covers and pages of notebooks
 - . Hold parts of items to be bound against the guide stops of the machine
 - . Press a pedal to operate the machine
 - . Remove broken pieces of wire from the machine, using pointed pliers
 - . Dispose of damaged covers and backs

HOURS OF WORK/TRAVEL

- Some of these jobs offer opportunities for part-time or temporary work.

SAMPLE PLACES OF WORK

- Printing and publishing companies
- Paper goods manufacturers
- Book binderies
- Ammunitions factories or plants

765 TEXTILE, APPAREL, AND FURNISHINGS MACHINE OPERATORS AND TENDERS

These workers operate machines that make or treat textiles and garments. They may run machines that wind fibers or fabrics on spools or rolls, knit or weave material, or cut fabrics for making clothes. Others run machines that attach fasteners to clothing, sew garments together to make garments, upholstery, or books, or make shoes and boots. Some workers operate dry cleaning or pressing equipment, or use machines to block hats, dye yarn, or stretch cloth.

7651 WINDING AND TWISTING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to wind fibers or fabric onto spools and to twist, straighten, or tighten fibers used in textile products. They load the machines by guiding fiber, thread, or fabric onto machine rolls and through reels and guides. They start the machines, watch their operation, and remove fibers from clogged rollers. They may weigh rolls or fabric or set counters to record the amount of fiber or fabric wound. They also clean the machines and keep production records.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Wind fabric onto rolls
 - . Tighten fibers in dyed thread
 - . Clean and straighten fibers
 - . Unwind cloth from rolls so it can be further processed
 - . Wind several strands of fiberglass into a single strand
 - . Singe lint and fuzz from yarn
 - . Wind yarn into balls
 - . Twist fiber strands or twine into reels
 - . Wind rope onto reels
 - . Wind fishing line onto spools
 - . Wind fabric onto tubing to make paint rollers
 - . Wind shoelaces onto cardboard spools to prepare them for shipping
- Guide fabric into machine rolls
- Thread strands of fiber through machine reels and guides
- Guide fibers, thread, or line back and forth across a spool
- Move tension and speed levers to wind rolls of fabric through the machine
- Hoist rolls of fabric onto a scale
- Set counters to record the amount of yarn wound
- Watch winding units to detect broken fiber ends
- Watch signal lights that show when machine processes have ended
- Record production information or work tickets
- Remove fibers from clogged rollers by hand
- Clean rollers, using a rag, solvent, and scraper
- Clean machines, using an airhose and rake
- Read yardage scales
- Weigh samples of cloth and record their weights
- Push loaded trucks of cloth from the work area
- Use a sewing machine to sew new cloth roll ends to cloth already in a machine

HOURS OF WORK/TRAVEL

- These jobs may require shift work.

SAMPLE PLACES OF WORK

- Textile plants
- Rubber good manufacturers
- Companies that make coated fibers or fabrics
- Knitting mills
- Plants that produce waste and batting
- Companies that produce cord and twine
- Carpet and rug manufacturers
- Boot and shoe manufacturers
- Plants that do trimming and embroidery work
- Furniture manufacturers
- Companies that make brushes and brooms

7652 KNITTING AND WEAVING MACHINE OPERATORS AND TENDERS

These workers operate machines used to knit or weave fabrics. They operate a number of machines at one time. They mount loom frames and spools in the machines, thread the machines with yarn, and then start the machines. They patrol the work area to watch for machinery problems, clear machine jams, replace damaged machine parts, and refill spent yarn packages. They also may roll woven fabrics onto tubes or rolls and keep production records.

SAMPLE WORK ACTIVITIES

- Mount loom frames and spools in machines
- Place yarn packages onto machine holders
- Thread yarn through machine guides, tensions, and needle carriers
- Start looms by pressing a button or throwing a power switch
- Watch weaving to detect defects in cloth
- Mark or cut cloth when enough yardage has been woven
- Tie broken ends of yarn
- Pull out yarn strands to remove defects in weavings
- Examine looms to determine why they have stopped
- Clear jams by removing bobbins and rewinding snarled yarn
- Record the amount of fabric woven
- Start blowers and blades that trim yarn ends
- Replace dull machine cutting blades
- Roll woven fabric onto tubes or rolls
- Work under contract as an APPRENTICE while learning the WEAVER'S craft

HOURS OF WORK/TRAVEL

- These jobs may require shift work.

SAMPLE PLACES OF WORK

- Textile mills
- Carpet and rug manufacturers
- Companies that make asbestos products
- Hosiery mills
- Companies that make cord and twine products
- Companies that make knit goods

7653 TEXTILE FABRICATING MACHINE OPERATORS AND TENDERS

These workers operate and tend machines used to attach fasteners to clothing and other textile products. They may work with cloth, canvas, paper, plastics, leather, and rubber. Some tend machines that attach buttons to apparel. Others tend machines that fasten fabric and padding with eyelets to form panels for mattresses. These are only a few examples of the products they help produce. These workers load fasteners into a machine, position the materials fastened and press pedals to operate the machine.

SAMPLE WORK ACTIVITIES

- Tend a machine that tacks buttons onto caps or clothing
- Place tacks in a holder on a machine bed
- Position premarked articles over a machine bed so that buttons can be attached to them
- Pour metal fasteners into the hopper of a machine
- Press a pedal to start a machine that feeds fasteners from a holder and forces the fasteners through material
- Load fabric on machine reels
- Cut, fold, and bundle mattress panels as they come out from a machine
- Push a pedal to lower a machine ram and rivet sections of material together

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Clothing manufacturing companies
- Hat and cap factories
- Companies that make mattresses
- Any industry that produces products equipped with fasteners or parts that are joined with snaps, buttons, or similar fasteners

7654 TEXTILE CUTTING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to cut fibers or fabric. They load or feed material into the machine and adjust guides and cutters. They watch machine operations for problems such as yarn breaks or wrinkled cloth. Once articles have been cut, they may stack or bundle them. They also may truck materials from storage rooms, clean and oil the machinery and weigh or measure finished articles.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Cut scrap fabric into flock (powder) use in making garments
 - . Cut fur from pelts
 - . Cut strands of yarn to size for use in making mopheads
 - . Cut rolls of fabric into strips used in making mopheads
 - . Cut strands of fiberglass to size
 - . Trim excess material from hats
 - . Cut felt into various shapes
 - . Cut materials used to insulate or upholster aircraft
 - . Cut cloth into specified lengths for
- Use a handtruck to move boxes of material from storage
- Turn setscrews to adjust machine guides
- Position machine cutters
- Turn knobs to regulate machine feeds
- Space knives on machines according to the width of the cloth to be cut
- Use a power hoist to position rolls of fiber in a handler
- Draw cutting lines on material with chalk or a pencil, following a pattern or blueprint
- Dump fabric on a conveyor leading to rotary knives
- Mount rolls of material onto machine spindles
- Place bales of material at the feedend of the machine
- Push material against a revolving blade, following the outline of a pattern
- Feed fabric against machine guides and under feed rollers
- Replace dull cutting blades, using handtools
- Thread the end of material rolls through machine cutters, rollers, and bobbins
- Watch material move through machines to detect wrinkles and yarn breaks
- Remove cuttings from machines and place them in containers for further processing
- Cut out defects in materials, using scissors
- Stack and bundle finished articles
- Use an electric cutting knife to cut along marked lines

HOURS OF WORK/TRAVEL

- These jobs may require shift work.

SAMPLE PLACES OF WORK

- Textile mills
- Rubber goods manufacturers

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- Companies that make hats and caps
- Companies that produce leather or leather products
- Carpet and rug manufacturers
- Boot and shoe manufacturers
- Companies that produce felt goods
- Companies that do trimmings and embroidery work
- Furniture manufacturers
- Ammunition factories
- Garment factories
- Aircraft manufacturers

7655 TEXTILE SEWING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to sew together materials. They make items such as garments, quilts, upholstery, books, art goods, toys, or similar products. They thread the machines, adjust needles, and move controls to regulate feed rates and thread tensions. They may adjust the machine table to sew articles of various sizes and shapes. They watch machine operations to detect and correct stitching problems, and may replace damaged needles as necessary.

SAMPLE WORK ACTIVITIES

- Operate or tend a machine to:
 - . Join fabric parts to make upholstery for planes, boats, and cars
 - . Sew garment parts together
 - . Sew zippers, art goods, stockings, curtains, or other textile goods
 - . Tuft flowered designs on products
 - . Sew pages of paper together to form books
 - . Put tufting buttons in mattresses
 - . Stitch fibers to webbing to make nonwoven fabric
 - . Quilt layers of material for use in quilts
 - . Stitch hair onto doll heads
 - . Cover metal rings used as windowshade pulls
- Thread machines and adjust machine needles
- Set feed arcs for the size of articles to be sewn
- Place yarn packages on the spindles of a machine
- Fill a machine hopper with buttons
- Place articles on the table of a machine and turn wheels to adjust the distance between articles and the machine head
- Pull boxes of folded material into feeding position
- Place material at the feedend of a machine and thread it through machine units
- Guide material under the needle of a sewing machine
- Turn dials on a control panel to regulate conveyor speeds, feed rates, and roll pressure
- Press a pedal to operate the machine feed arm and sewer
- Turn a machine bed to rotate material
- Move the machine table forward and backward to space stitches
- Watch machine operations to detect cutting or stitching problems
- Inspect articles for sewing defects
- Feel needles to detect rough places
- Replace damaged needles
- Clean lint from machines

HOURS OF WORK/TRAVEL

- These jobs may require shift work.

SAMPLE PLACES OF WORK

- Factories and plants that produce products such as:

- . Carpets and rugs
- . Clothing
- . Fur goods
- . Furniture
- . Gloves and mittens
- . Hats and caps

- . Hosiery
- . Knit goods
- . Leather goods
- . Mattresses
- . Textile goods

- Printing and publishing companies

7656 SHOE MACHINE OPERATORS AND TENDERS

These people operate or tend machines that sew together items such as boots and shoes. They start, stop, and control the speed of a sewing or stitching machine. They thread the machine by placing a spool of thread on the machine spindle and drawing the end of the thread through guides, slots, and needles. They align parts to be stitched, following seams, edges, or markings. They press a pedal or knee control to raise and lower the machine pressure foot and to start and stop the machine. They guide parts under the needle to sew parts of products together. They also may sew decorative stitches or buckles on shoe parts.

SAMPLE WORK ACTIVITIES

- Operate a stitching machine to reinforce shoe parts or attach buckles
- Place a spool of thread on the machine spindle and draw the end of the thread through guides, slots, and needles
- Align parts to be stitched, following seams, edges, or markings
- Position parts under the needle and press a pedal to start the machine
- Cut excess threads, using scissors or a knife
- Operate a stitching machine to join or decorate shoe parts
- Select a prewound bobbin and place it on the spindle
- Press a knee control to raise or lower the machine pressure foot
- Guide parts under the needle, following seams, edges, or markings

HOURS OF WORK/TRAVEL

- Some of these jobs may require shift work.

SAMPLE PLACES OF WORK

- Boot and shoe manufacturers
- Companies that do trimming and embroidery work
- Shoe repair shops

7657 PRESSING MACHINE OPERATORS

These workers operate machines used to press garments and other textile products. They use steam presses and other machines to flatten seams and shape garments. Some specialize in pressing particular garment parts, such as collars, seams, or pockets. Others work on a certain type of garment, such as handkerchiefs, hats, or shirts. Their duties vary from simple smoothing of cloth and flattening of seams to skillful shaping of garment parts.

SAMPLE WORK ACTIVITIES

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- Operate a machine to press and shape drycleaned leather garments
- Position garments on a pressing machine
- Push buttons to lower the pressing head of a machine onto garments
- Use a steam pressing machine or a hand iron to press trousers, sweaters, and dresses

- Operate a pressing machine to smooth surfaces, flatten seams, or shape drapes and slipcovers
- Block (shape) knitted garments after they are cleaned
- Push levers and foot pedals to operate pressing machines
- Steam the brim of a hat and place it under a heated sand bag to press and shape it
- Press washed wearing apparel, such as uniforms, jackets, and aprons
- Turn dials to control the amount of steam coming from a pressing machine
- Slide material back and forth over a heated metal form to smooth and press parts of garments that are hard to reach
- Tend a machine that fluffs and irons handkerchiefs and napkins
- Tend a machine that presses and blocks coats and blouses
- Use a machine to fold finished shirts around pieces of cardboard

HOURS OF WORK/TRAVEL

- PRESSING MACHINE OPERATORS who work in laundry or drycleaning establishments may be required to work on Saturdays.

SAMPLE PLACES OF WORK

- Laundry and dry cleaning establishments
- Companies that make clothing, hats, or textile products

7658 LAUNDERING AND DRY CLEANING MACHINE OPERATORS AND TENDERS

These people operate or tend machines that launder, dye or dryclean clothing, rugs, and linens. They may operate one or several machines. They load the machines and set controls for wash speed, water level and temperature. They also add the soap and bleach and sometimes starch. They may spot clean items, wash delicate fabrics by hand, or use chemical solutions to clean fabrics. They may iron, fold, or patch articles. Some specialize in cleaning items such as furs, feathers, or leather garments.

SAMPLE WORK ACTIVITIES

- Move levers or turn handwheels to control the roller clearance, sprayer, water force, and washing speed of a machine
- Tend a machine that winds towels into rolls to prepare them for ironing or packaging
- Run articles through machine wringers and then dry them for specified times in a dryer
- Sort dried articles
- Fold laundry and place it in storage bins
- Oil and grease machine parts
- Tend a machine that patches articles, such as tablecloths, sheets,
- Identify stains in fabrics and apply chemical solutions to remove them
- Clean fur pieces using brushes, sawdust, and cleaning fluid
- Tend a machine that cleans and sterilizes feathers for use in pillows
- Dye rugs on the customers' premises, using a spray gun, dye solution, and brushes
- Tend a machine that tumbles fur garments in dry or liquid cleaning agents
- Work as an APPRENTICE while learning the drycleaning trade

HOURS OF WORK/TRAVEL

- LAUNDRY and DRYCLEANING WORKERS average about 35 hours a week on the job. Some are required to work on Saturdays.

SAMPLE PLACES OF WORK

- Laundry and drycleaning plants and businesses
- Hospitals and other institutions
- Textile mills

- Companies that do their own laundering

7659 TEXTILE MACHINE OPERATORS AND TENDERS, MISCELLANEOUS

People in these jobs operate or tend machines used to process, finish, or treat textile products. Their work duties vary. They may block and trim hats, clean rugs, or fluff dry laundry. Others clean furs, stretch cloth, stuff quilts, dye garments, join shoe parts, or perform other tasks to prepare or finish textile products.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
- Scorch designs into leather garment parts
- Raise the pile of plush fabrics
- Shrink cloth to size
- Mix fibers into blends
- Fold pleats into drapery panels
- Clean, dry, and cut fibers for use as pillow and quilt filler
- Join cemented shoe parts
- Cement and nail shoe parts
- Bond together and emboss materials used inside cars
- Spread cloth in layers on a table to prepare it for cutting
- Bond leather and plastic parts of wallets and purses
- Cut and seal the edges of buttonholes
- Clean, block, trim, and make minor repairs to hats
- Clean rugs
- Fold shirts
- Fluff-dry laundry
- Make synthetic fibers
- Stretch knitted cloth to a uniform width
- Dry packages of yarn
- Dye and finish garments
- Fuse emblems and labels on garment parts

HOURS OF WORK/TRAVEL

- Many of these jobs typically require shift work.

SAMPLE PLACES OF WORK

- Shops or plants that specialize in cleaning, dyeing, and pressing items, such as hats, rugs, garments and household linens
- Laundries and dry cleaners
- Retail stores
- Meat packing plants
- Furriers
- Plants that produce products, such as:
 - . Boot and shoes
 - . Building materials
 - . Carpets and rugs
 - . Clothing
 - . Coated fabrics
 - . Cords and twine
 - . Felt goods
 - . Floor covering
 - . Hats and caps
 - . Household furniture
 - . Knit goods
 - . Leather
 - . Synthetic fibers
 - . Textiles

766-7 MACHINE OPERATORS AND TENDERS: ASSORTED MATERIALS

These workers operate machines that process or manufacture products. Workers set and adjust machines, measure and load materials, and watch operations. They check processed materials. These machines may do such diverse things as fold boxes, glue skis, supply heat to buildings, or mix paints or breads. They may cool plasma, shape plastics or chocolate chips, separate precious metals from ore, develop film, compress fruits for juice, or bleach paper pulp.

7661 CEMENTING AND GLUING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to cement, glue, or tape together parts of products. They set or adjust machine controls, mount or load materials in the machines, fill glue or other containers, and watch machine operations to detect problems. They also check finished articles for defects. They may perform other tasks such as cleaning and oiling equipment, clearing machine jams, and keeping production records.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:

- . Apply glue to veneer sheets before they are assembled into panels
- . Glue paper to material used as building insulation
- . Bond asbestos lining to car brakes
- . Bond paper and plastic film used in book covers
- . Tape together boxes
- . Glue together strands of paper twine to make tape
- . Cement rubber parts together
- . Glue cork, plastic, or aluminum foil in bottle caps
- . Bond plastic strips to skis
- . Glue bristles to brush heads
- . Glue veneer to the edges of tabletops
- . Apply glue to wheel assemblies of clocks
- . Build tire parts

- Mount rolls of paper or plastic on machine holders, using a hoist
- Use tweezers to place small objects in the slots of a machine tool
- Place articles on machines by hand
- Position and adjust feed guides and rollers
- Thread paper between feed guides
- Set temperature controls
- Thread wire and tape through a machine
- Turn valves to adjust gas flames used to heat glue
- Fill inkpots and glue containers
- Draw workpiece edges between rollers
- Press pedals to start a machine
- Watch machines operate to detect problems
- Turn wheels, valves, and dials to adjust machine operations
- Press a pedal to control a conveyor that moves articles
- Tend ovens that dry glue to secure parts together
- Clear machine jams
- Measure finished products
- Use abrasives, a blade, and solvent to remove defects from products

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hours may vary from industry to industry. However, many of these jobs typically require shift work.

SAMPLE PLACES OF WORK

- Factories and plants that such produce products as:

- . Boots and shoes
- . Brushes and brooms
- . Clocks and watches
- . Cords and twine
- . Furniture
- . Glass products

- . Paper goods
- . Rubber goods
- . Rubber tires and tubes
- . Sports equipment
- . Veneer and plywood
- . Wooden boxes

- Auto service stations
- Printing and publishing companies

7662 PACKAGING AND FILLING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to fill articles with materials or to package products. They may fill medicine capsules or stuffed toys, or package food or tobacco products. They load materials into the machines, set controls, and clear machine jams when necessary. They may also replace worn or damaged machine parts, clean used equipment, weigh sample products, and keep production records.

SAMPLE WORK ACTIVITIES

- Operate or tend machines to:

- . Fill molds with meat to form meat loaves
- . Wind bindings around hams
- . Tie hot dogs and sausages
- . Fill containers with salt, syrup, or other food products
- . Fill containers with gases
- . Fill capsules with medicines
- . Staple string ties onto the flaps of paper folders
- . Bale rubber pellets

- . Fill dynamite cartridges
- . Wind metal bands around the ends of boxes
- . Fill glass vials with alcohol
- . Load gun cartridge cases with powder and bullets
- . Blow filler into stuffed-toy shells
- . Stuff filler material into baseball base covers
- . Insert spring assemblies into mattresses

- Fill barrels with wine

- . Fill containers used to make popcycles
- . Tie and label stacks of lumber
- . Pack tobacco products into cartons
- . Fill kegs with beer

- Fill racks with packaging materials
- Adjust machines for size changes, using handtools
- Dump materials into machine hoppers
- Turn valves and press buttons to set machine operations
- Watch machine operations to detect problems
- Clear machine jams
- Unload materials from machines
- Check finished products for defects
- Weigh packaged samples
- Place filled containers on a handtruck
- Keep production records
- Clean machinery and equipment
- Replace worn or damaged machine parts

HOURS OF WORK/TRAVEL

- These jobs may require shift work.

SAMPLE PLACES OF WORK

- Meat packing plants
- Farms

- Wholesale distributors
- Food processing plants
- Companies that produce products, such as:

- . Ammunition
- . Automobiles
- . Building board
- . Canvas goods
- . Cutlery and tools
- . Electrical equipment
- . Explosives
- . Liquors
- . Mattresses

- . Medical devices
- . Medicines and drugs
- . Paper goods
- . Plastic materials
- . Rubber goods
- . Sports equipment
- . Tobacco goods
- . Toys and games
- . Wooden boxes

7663 EXTRUDING AND FORMING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to extrude (press out) or form materials into desired shapes. The products they may form include: cheese balls, candies, animal feed pellets, gaskets, bowling balls, and silverware. They install and adjust machine parts, load materials in the machines, and watch for problems with machine operations. They adjust machine settings, oil and clean parts, and clear away jammed material. They also check finished products for defects and may weigh products and keep production records.

SAMPLE WORK ACTIVITIES

- Operate or tend machines to:

- . Form, cool, and cut processed cheese
- . Form sugar decorations for cakes
- . Form chocolate stars or chips
- . Shape dough before it is baked
- . Form cooked grain into flakes of cereal
- . Press shredded tobacco into plugs of chewing tobacco
- . Press ingredients into feed pellets for poultry
- . Roll, cut and twine dough to form pretzels
- . Form and wrap ice cream sandwiches
- . Form woodpulp from slush
- . Mold wax into cakes

- . Mold plastic beads
- . Mold and cure rubber goods such as bowling balls
- . Press clay into brick
- . Mix and mold ingredients to make writing chalk
- . Form clay flowerpots
- . Form bottles from molten glass
- . Mold fiberglass into luggage cases
- . Shape box tops
- . Wind copper wire around plastic cores to make birth control devices
- . Stamp out spoons and forks from sterling silver
- . Shape footballs and soccer balls

- Install and adjust machine attachments
- Start equipment, such as vacuum and water pumps, conveyors, and compressors
- Fill machine hoppers with materials
- Thread material through machine units
- Set temperature controls
- Turn dials and handwheels to regulate machine actions
- Watch lighted displays that indicate processing problems
- Clear jammed materials from machines
- Inspect finished products for defects
- Weigh formed products
- Place finished products on a rack or handtruck
- Clean machinery and equipment

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hours may vary from industry to industry. However, many of these jobs typically require shift work.

SAMPLE PLACES OF WORK

- Factories and plants that produce:

- . Ammunition
- . Bakery goods
- . Brick and tile
- . Building board
- . Buttons
- . Candies
- . Carpets and rugs
- . Cereals
- . Chemicals
- . Chocolate and cocoa
- . Concrete products
- . Cord and twine
- . Dairy products
- . Glass

- . Jewelry
- . Leather products
- . Needles and pins
- . Oils and fats
- . Paper and pulp
- . Pens and pencils
- . Plastic products
- . Rubber goods
- . Rubber tires
- . Silverware
- . Sports equipment
- . Synthetic fibers
- . Tobacco

- Oil refineries

- Foundries

7664 MIXING AND BLENDING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to mix or blend ingredients to make materials such as paint, candy, doughs, ice cream, animal feed, sausage, mortar, chemicals, or wine. They measure or weigh ingredients and pour or load them into the machines. They may follow work orders, charts, or formulas to determine the amounts of different ingredients required. They start machines and watch them operate to detect problems. They may check gauges and meter readings, and move controls to regulate machine actions. They also may inspect and clean machine units.

SAMPLE WORK ACTIVITIES

- Operate or tend machines to mix or blend:

- . Compounds used to coat tin cans
- . Batches of powdered metal
- . Flour
- . Ingredients to make doughs
- . Shortening and margarine
- . Ingredients to make cake batter or ice cream
- . Tobacco
- . Citrus fruit juices
- . Ingredients to make candy
- . Meat scraps used in poultry feed

- . Ingredients to make dry food products, such as baking powder or gelatin desserts
- . Ground meat to make sausage
- . Chemical solutions
- . Ingredients to make paint products
- . Rubber
- . Powders used in signal flares
- . Clay used in ceramic ware
- . Mix powdered stains for coloring clay used to make mosaic tiles

- Follow work orders, charts, or formulas
- Calculate the amount of materials needed to make products
- Measure materials
- Weigh materials on a scale
- Pour materials into containers
- Sift mixtures through a screen
- Use a hoist to lift barrels of liquids
- Shovel materials into a machine
- Start pumps
- Start and stop machines
- Watch gauges, thermometers, and meters
- Move switches and turn valves to regulate machine actions and conditions
- Inspect and clean equipment
- Test materials
- Keep stock control records

HOURS OF WORK/TRAVEL

- These people work in a wide variety of industries. Work hour requirements may vary from industry to industry. Workers in factories or plants may work on shifts. Those involved in continuous processes may also work weekends.

SAMPLE PLACES OF WORK

- Factories and plants that produce:

- | | |
|-------------------------------|------------------------------|
| . Building materials | . Oils and fats |
| . Candy | . Optical goods |
| . Canned foods | . Paper and pulp |
| . Cereals | . Plastic materials |
| . Chemicals | . Rubber goods |
| . Chewing gum | . Rubber tires |
| . Chocolate and cocoa | . Salt |
| . Corn products | . Sugar |
| . Distilled liquors | . Tinware |
| . Electronic products | . Tobacco products |
| . Flavoring extract and syrup | . Window shades and fixtures |
| . Glue | |

- Food processing plants
- Machine shops
- Ore refineries
- Iron and steel mills
- Bakeries
- Grain and feed mills
- Canneries
- Meat packing plants
- Dairies

7665 COOLING AND FREEZING EQUIPMENT OPERATORS AND TENDERS

These workers operate or tend cooling equipment used to preserve or process products such as foods, blood plasma, or glue. They may also start equipment such as water pumps, agitators, ice feeders, and conveyors. They read gauges and thermometers to check and control the temperature in chilling vats, coolers, or freezers. They may keep records of temperature and other readings. They may measure and mix ingredients to prepare products to be cooled or frozen.

SAMPLE WORK ACTIVITIES

- Tend vats and cooling equipment used to chill foods to prevent spoilage
 - . Turn valves to control the rate of flow and the temperature of water in the chilling vats
 - . Watch ice flow through troughs and dislodge caked ice with a mallet
 - . Read gauges and thermometers to check the temperature in the chilling vats and coolers
- Tend machines that stir sugar mixtures to cool them and prevent them from hardening
 - . Turn valves to maintain the level, temperature, and consistency of the sugar mixture
 - . Keep records of temperature readings and power usage
- Tend freezer used to freeze liquid ice cream mix
 - . Measure specified amounts of ice cream mix, color, and flavor, and dump them in freezer barrels
 - . Start beaters and refrigerating units
 - . Watch a clock and meter for specified readings
 - . Wash and sterilize equipment

- Tend equipment used to fast-freeze food products
 - . Push switches to control a conveyor that moves food products through a fast-freezing tunnel
 - . Scrape the conveyor to remove excess ice or frost, using handtools
- Tend equipment that freezes water into ice
 - . Lower containers of water into freezing tanks, using a hoist
- Tend equipment used to cool blood plasma or chemicals to prepare them for storage or shipment

HOJRS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Slaughter houses and meat-packing plants
- Sugar refineries
- Dairies and firms that produce dairy products
- Canneries and food preserving businesses
- Companies that produce food products
- Breweries
- Ice plants
- Glue factories
- Chemical plants and chemical products industries
- Blood banks and medical laboratories that process blood
- Businesses that use cooling or freezing equipment to process or preserve products

7666 SEPARATING AND FILTERING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to separate, filter, or refine materials. They work in a variety of industries. They may tend machines that separate waste materials from ore, refine oil used in making paint, or filter spices to remove mold and insects. They hoist, pump, or dump materials into the machines. They may read meters and collect samples of materials and keep processing records. They may help set up, clean, and repair the equipment.

SAMPLE WORK ACTIVITIES

- Operate or tend machines to:

. Remove impurities from foods . Filter lard or oil . Separate fruits, vegetables, or other foods according to size . Remove rocks, mold, and insects from spices . Remove stems from leaves of tobacco . Remove sand and coarse fibers from woodpulp . Separate tar and ammonia from gas coming from coke ovens	. Remove water from crude oil . Remove impurities from varnishes and lacquers . Remove gases that cause air pollution . Refine linseed oil for use in making paint . Size crushed coal, ore, or rock . Separate minerals from other materials
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- Help workers set up equipment
- Load materials into tanks or other containers using a hoist
- Dump materials into machine hoppers
- Start conveyors that carry materials
- Turn valves to regulate the flow of materials
- Pump materials through filters
- Collect samples of solutions

- Watch equipment operate to detect problems
- Read gauges and thermometers
- Clean and oil equipment
- Test materials
- Post information about equipment operations
- Inspect products for defects
- Replace defective machine parts
- Remove clogged materials from conveyors and screens
- Use handtools to repair equipment

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hours vary from industry to industry. However, shift work is typically required in many of these jobs.

SAMPLE PLACES OF WORK

- Ore dressing, smelting, and refining plants
- Canneries
- Grain and feed mills
- Farms
- Chemical companies
- Oil companies
- Food processing plants
- Mining and quarrying companies
- Factories or plants that produce:
 - . Buttons
 - . Chocolate and cocoa
 - . Coke products
 - . Corn products
 - . Glue
 - . Malt liquors
 - . Nuts and nut products
 - . Oils and fats
 - . Optical goods
 - . Paper and pulp
 - . Rubber goods
 - . Sugar
 - . Tobacco products

7667 COMPRESSING AND COMPACTING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to press together or compact materials or objects. They work in a variety of industries. They may pack sand in molds, press meats into shape for packing, or press fruits to extract juice. They may also compress materials to form or shape products, such as malted milk tablets or plugs of chewing tobacco. They install and adjust machines, move controls, load and unload materials, and watch machine operations. They check finished products for defects, and may collect samples for lab tests.

SAMPLE WORK ACTIVITIES

- Operate or tend machines to:
 - . Pack sand in molds used in a foundry
 - . Press bacon, beef, or hams, into shape for packing
 - . Compress lumps of tobacco into plugs of chewing tobacco
 - . Extract juice from fruit
 - . Extract oil from cakes of oilseed meal
 - . Extract water from beets and mix it with molasses to make animal feed
 - . Compress malted milk powder into tablets
 - . Heat cigars and press them into a square shape before they are wrapped
 - . Combine sheets of rubber or felt
 - . Form cushions and mattresses from rubber materials
 - . Compact deodorant crystals into blocks
 - . Mold abrasive disks and grinding wheels
 - . Laminate leather and plastic parts used in making wallets and purses
 - . Form rolls of gold leaf
- Install machine attachments
- Use a hoist to load materials onto a machine
- Position articles on a machine table

- Thread paper through machine units
- Turn valves, press pedals, and move levers to control machine actions
- Watch machines operate to detect problems
- Watch pressure gauges which indicate that machines need cleaning
- Remove finished articles or materials from machines
- Examine finish products to detect defects
- Start conveyor belts
- Take samples of materials for lab tests
- Use handtools to replace worn machine parts
- Clean and oil machinery

HOURS OF WORK/TRAVEL

- These people work in a variety industries. Work hours may vary from industry to industry. However, many of these jobs typically require shift work.

SAMPLE PLACES OF WORK

- Foundries
- Meat packing plants
- Canneries
- Dairies
- Factories and plants that produce products such as:
 - . Abrasives and polishing products
 - . Ammunition
 - . Boots and shoes
 - . Brushes and brooms
 - . Building board
 - . Chemicals
 - . Compressed gases
 - . Corn products
 - . Distilled liquors
 - . Explosives
 - . Gold leaf and foil
 - . Grease and tallow
 - . Leather products
 - . Malt liquors and beers
 - . Medicines and drugs
 - . Minerals
 - . Paper and pulp
 - . Plastics
 - . Rubber goods
 - . Sports equipment
 - . Tobacco

7668 BOILER OPERATORS AND TENDERS (LOW PRESSURE)

These workers control boilers and other equipment used to heat buildings and to provide power for tools and equipment. They operate boilers, heat pumps, compressors, and fans. They push buttons and open valves to start and control the equipment. They may light oil or gas burners. They watch temperature and pressure gauges and adjust fuel supply and other controls as necessary. They also oil and adjust equipment, replace gauge glasses, and keep the work area and equipment clean.

SAMPLE WORK ACTIVITIES

- Tend heaters used to thaw frozen material, such as coal and coke, in railroad cars
 - . Push buttons to start pumps and fans
 - . Light oil burners
 - . Oil and adjust equipment, such as
 - . Pump and fan bearings
 - . Clean the work area and equipment with an airhose
- Tend burners that heat units in which chemical products are produced
 - . Move controls to regulate the flow of gas or oil to burners
 - . Use handtools, scrapers, brushes, and cleaning agents to clean material containers
- Tend air compressors that supply compressed air needed for pneumatic tools, hoists, and air lances

- . Start a power unit to build up pressure in a compressor
- . Watch temperature and pressure gauges and adjust controls as needed
- Tend boilers that supply steam heat for office or apartment buildings
 - . Shovel coal or coke into a firebox
 - . Connect fuel oil lines to burners
 - . Repair pipelines and replace gauge glasses

HOURS OF WORK/TRAVEL

(No information)

SAMPLE PLACES OF WORK

- Electrical power plants
- Factories and plants
- Hospitals
- Office and apartment buildings
- Railroad companies
- Schools
- Ship lines

7669 COATING, PAINTING, AND SPRAYING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to coat, paint, or spray objects. They work in a variety of industries. For example, they may coat candy with syrup, coat paper with sizing solutions, or paint airplanes or cars. They weigh, measure, and mix ingredients. They install and adjust machine units, fill machine units with solutions, and load articles in the machines to be coated or painted. They watch the machines operate and adjust controls as necessary. They also check finished articles for defects and may keep production records.

SAMPLE WORK ACTIVITIES

- Operate or tend machines to:
 - . Coat candy, nuts, or chewing gum with syrup
 - . Coat bakery products with melted chocolate
 - . Put icings on cookies
 - . Coat paper with an ink solution to make carbon paper
 - . Apply a gloss and finish to paper
 - . Dye paper to a specified color
 - . Coat paper decals with varnish
 - . Apply coatings to medicine tablets
 - . Apply flame-proof tips to matches
 - . Spray shoe heels with lacquer
 - . Coat electrical equipment with varnish or enamel to insulate wires and coils
 - . Paint cars, trucks, or airplanes
- Install machine attachments, using wrenches
- Adjust machine settings
- Mix paints or coating solutions
- Fill machine units with paint or coating solutions
- Mount rolls of paper on a machine spindle
- Thread paper through machine rollers
- Push levers to start machines and conveyor bases
- Watch a thermometer and control the machines temperature
- Weigh coated objects to see if they meet standards
- Measure the thickness of coated objects, using a micrometer
- Record gauge and graph readings
- Cut jammed paper from rolls and machines, using a knife
- Keep production records
- Work under contract as an APPRENTICE while learning the AUTO PAINTER'S craft

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hours may vary from industry to industry. However, many of these jobs typically require shift work.

SAMPLE PLACES OF WORK

- Factories or plants that produce:

- . Abrasives products
- . Ammunition
- . Asbestos products
- . Bakery products
- . Boots and shoes
- . Brick and tile
- . Building board
- . Chewing gum or candy
- . Concrete products
- . Electrical equipment
- . Electronic products
- . Floor covering
- . Glue
- . Leather

- . Matches
- . Medicines and drugs
- . Mirror and picture frames
- . Mirrors
- . Paper goods
- . Pens and pencils
- . Paper and pulp
- . Photography supplies
- . Rubber goods
- . Rubber tires
- . Textiles
- . Veneer plywood
- . Wallpaper

- Businesses that specialize in painting vehicles
- Printing and publishing companies

7671 PHOTOGRAPHIC DEVELOPING MACHINE OPERATOR

These workers operate equipment used to develop film and print photographs. They also may process color slides and movie films. Some make prints from negatives. Some mend, sort, and file film. Some tend machines that develop rolls of film. These workers may spend much of their time in a darkroom. They mix developer and other solutions and operate machines such as enlargers, printers, and dryers. Some tend machines that automatically develop, fix, wash, and dry photographs.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:

- . Make color prints from negatives
- . Develop still or motion picture film
- . Print movie film and produce soundtracks for the film
- . Print photographs

- . Develop rolls of film
- . Cut and mount film to make slides
- . Develop, fix, wash, and dry photographs

- Read customer instructions to determine the processing required
- Sort film into bins according to size and type of processing required
- Follow formulas to mix chemical solutions used in processing film
- Mount film in a developing machine
- Pull a lever to lower the film in processing position
- Flip a switch to move film through a series of solutions and into a drying cabinet
- Watch film pass through a machine and adjust machine controls as necessary
- Feel the edges of the film to detect tears
- Repair film, using a hand stapler or tape
- Load rolls of printing paper into printing equipment
- Examine negatives to determine the equipment settings required
- Inspect finished prints for defects, such as dust
- Remove defects from photographs, using a brush, cloth, and cleaning fluid
- Cut and splice film according to written instructions
- Project film on a screen to detect defects in the printing and developing

HOURS OF WORK/TRAVEL

- Most photo lab employees work a 40-hour week. Those in labs that specialize in processing film for amateur photographers may work overtime during peak seasons, such as holidays.

SAMPLE PLACES OF WORK

- Photofinishing labs
- Portrait and commercial photography studios
- Manufacturing companies
- Newspapers and magazine publishers
- Advertising agencies
- Commercial labs that specialize in processing the work of professional photographers

7672 ROASTING AND BAKING MACHINE OPERATORS AND TENDERS

These workers control or tend machines used to roast, bake, toast, or dry out food, tobacco, or other products and materials. They move switches and other controls to regulate roasters or ovens and the pumps or conveyors that move materials to and from these machines. They may also scoop or dump materials on to conveyors for processing. They weigh or test materials, record machine readings, connect equipment, and replace worn machinery parts.

SAMPLE WORK ACTIVITIES

- Control roasting or baking machines to:
 - . Concentrate chemical solutions
 - . Dry and flavor cocoa beans
 - . Puff whole grain to make breakfast cereal
 - . Extract glue from bones
 - . Dry out sugar products
 - . Heat chocolate for use as a coating material
 - . Dry coffee beans
 - . Change liquid products into powder form
 - . Heat kilns used to process malt liquors
 - . Cure tobacco
 - . Roast coffee beans
 - . Dry nuts
 - . Parboil fish for canning
 - . Toast cereal products
 - . Pop popcorn
 - . Bake bread, pastries, and other bakery products
- Use wrenches to connect equipment, such as pipelines and driers
- Adjust equipment feeds, temperatures, and pressure
- Light gas jets
- Scoop materials onto a conveyor
- Watch materials on conveyors to prevent jams or spillage
- Watch gauges and recorder readings
- Record meter readings
- Examine and feel products to see whether process conditions should be changed
- Adjust roaster flames as required
- Collect samples of products for lab tests
- Test solutions, using meters
- Weigh ingredients
- Keep production records

HOURS OF WORK/TRAVEL

- These jobs may require shift work.

SAMPLE PLACES OF WORK

- Factories or plants that process or produce products such as:

- . Animal feeds
- . Bakery products
- . Candies
- . Canned and preserved foods
- . Cereals
- . Chocolate and cocoa
- . Coffee

- . Corn products
- . Dairy products
- . Glue
- . Macaroni and related products
- . Malt liquors and beers
- . Sudar
- . Tobacco

7673 WASHING, CLEANING, AND PICKLING EQUIPMENT OPERATORS AND TENDERS

These workers operate or tend machines used to wash, clean, pickle, or cure products or materials. They work in a variety of industries. They may wash food products, bleach paper, cure or pickle meats, or clean industrial products before they are processed or shipped. They weigh materials, load machine containers or conveyors, adjust machine settings and guides, and inspect finished products. They may take equipment apart and clean it, mix ingredients, unload and stack finished products, and keep process records.

SAMPLE WORK ACTIVITIES

- Operate or tend equipment to:

- . Wash ore dust collected from the air
- . Wash copper residue from scrap iron
- . Prepare brines and pickling solutions used for preserving food products
- . Inject meat with a curing solution
- . Melt and pasteurize butter
- . Remove hairs from slaughtered hogs
- . Prepare shellfish for canning or freezing
- . Control bottle-washing machines
- . Wash raw fruits and vegetables before they are canned
- . Clean and crack wheat used in cereal products
- . Bleach paper pulp
- . Bleach chemicals
- . Scrape excess carbon from baked electrodes
- . Wash and dry manufactured articles

- Weigh ingredients on a scale
- Mix ingredients
- Dump materials into machine hoppers
- Pump mixtures into tanks
- Move controls and valves to regulate the speed of conveyor and feed units
- Place materials on a conveyor
- Adjust machine settings and guides
- Adjust temperature and humidity gauges
- Turn valves and press buttons to control machine processes
- Watch machine operations to detect problems
- Examine pipes, nozzles, and other equipment parts for jams and leaks
- Collect samples for lab tests
- Test solutions, using meters
- Keep records of operations and processes
- Remove and clean machine strainers
- Clean equipment, using a water hose and scraper
- Grease and oil machinery parts
- Stack finished products

HOURS OF WORK/TRAVEL

- These jobs may require shift work.

SAMPLE PLACES OF WORK

- Factories or plants that produce:

- Bone, carbon, and lampblack
- Chemicals
- Coke products
- Corn products
- Electrical equipment
- Explosives
- Food products
- Leather goods
- Medicines and drugs
- Oils and fats
- Paper and pulp
- Galvanizing plants
- Mining and quarrying companies
- Ore dressing, smelting, and refining companies
- Meat packing plants
- Canneries
- Grain and feed mills

7674 FOLDING MACHINE OPERATORS AND TENDERS

These people operate or tend machines to fold paper and paperboard into products, such as boxes, bags, and envelopes. They may also fold and press pleats in cloth or other materials to shape parts of products. They attach folder devices to the machine, using handtools. They adjust machine guides and folders to produce folds of specified sizes. They mount material in the machine and may thread it through folder and pressing devices. They then start the machine and watch it operate. These workers may tend one or more machines.

SAMPLE WORK ACTIVITIES

- Tend a machine that folds blanks along scored lines to form boxes
- Adjust machine guides and folders for specified box sizes
- Feed box blanks into the machine
- Tend a machine that forms and glues flat blanks of paperboard into finished cartons used to pack goods
- Tend a machine that folds paper goods, such as booklets and paper sheets
- Turn a handwheel to adjust the folding slot opening, using a wrench and rule
- Start the machine, and move a lever to engage a clutch that starts the folding blade and conveyor rolls
- Feed items against the backstop of the machine
- Tend a machine that forms an opening in paper bags through which loose materials, such as cement or sugar, are poured into the bag
- Tend a machine that forms envelopes from paper rolls
- Tend machines that crimp rolled paper tubes to form caps and form them onto the ends of other tubes to make BB shot containers
- Tend machines that fold rubber strips or coated friction tape over cords to form strap material for use on rubber footwear
- Determine from work orders the width, length, and amount of stock to be made and prepare a work schedule
- Select cord, strip or tape, and folding attachments according to the work ticket
- Mount spools of cord on the machine spindles
- Mount a roll of strip or tape on the arbor
- Attach the folder to machine bracket, using a screwdriver
- Thread folded strap through paired rollers that press down folded edges
- Place a carton at the discharge end and start the machine
- Tend one or more machines that fold and press pleats into materials, such as cloth, paper, or plastic
- Turn thumbscrews or levers to adjust the pleating knife and the temperature of the pressing rollers
- Thread the end of a roll of material through guides, the pleating knife and between the heated rollers
- Start the machine and watch it operate

HOURS OF WORK/TRAVEL

- Workers in the paper and allied products industries usually average more than 40 hours of work a week. Evening or night shift work is often required in these jobs.

SAMPLE PLACES OF WORK

- Paper products manufacturers, including:
 - . Companies that make envelopes and similar paper products
 - . Firms that make paper or paperboard boxes and containers
 - . Companies that produce plastic bags
- Rubber goods manufacturers
- Textile companies
- Any industry that folds or pleats products or articles

7675 FURNACE, KILN, AND OVEN OPERATORS AND TENDERS

These workers control furnaces, kilns, or ovens to heat-treat products or materials. They work in a variety of industries. They may control heating equipment used to process oil or ore, clean parts, or heat rivets. They often work from written directions. They light burners, regulate temperature controls, start conveyors or pumps, and load materials for processing. They may also weigh or add chemicals to materials, clean and oil the machinery, and keep processing records.

SAMPLE WORK ACTIVITIES

- Control furnaces, kilns, or ovens used to:
 - . Burn away grease from used auto parts
 - . Heat rivets to a specified temperature
 - . Treat metal objects to prepare them for machinery
 - . Heat lawnmower blades to prepare them for bending
 - . Refine lead
 - . Dry paper products
 - . Process coal or crude oil
 - . Process gases into chemical products
 - . Affix paint on glass
 - . Fuse enamel onto metal jewelry parts
 - . Pump materials to and from storage
 - . Add chemicals to materials or solutions
 - . Set dials to control pressure and material flow
 - . Light gas jets
 - . Place objects in a furnace
 - . Turn knobs to regulate the heat or current in a furnace
 - . Weigh materials
 - . Start machine conveyors
 - . Lift heated objects from a conveyor, using tongs
 - . Feel materials to judge their dampness
 - . Use gauges to measure finished products
 - . Record the weight, type, and amount of material heated
 - . Grease and oil machinery parts

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hours may vary. Many jobs typically require shift work. Workers involved in continuous processes may also work during weekends.

SAMPLE PLACES OF WORK

- Auto service stations and repair shops
- Heat treating plants
- Iron and steel mills
- Foundries
- Ore dressing, smelting, and refining plants
- Oil refineries
- Utility companies
- Mining and quarrying companies
- Woodworking shops
- Companies that make:

- . Farm equipment
- . Ammunition
- . Coke products
- . Metal alloys
- . Paper and pulp
- . Building board
- . Bone, carbon, and lampblack
- . Chemicals

- . Glue
- . Plastics
- . Rubber goods
- . Medicines and drugs
- . Floor covering
- . Jewelry
- . Firearms
- . Electrical equipment

7676 STILL, CLARIFIER, AND PRECIPITATOR OPERATORS AND TENDERS

These workers operate or tend equipment used to purify, refine, or process industrial materials. They work in a variety of industries. They may refine sugar or other food products, remove impurities from water used in making products or separate metals from ore. They mix and blend chemicals, dump ingredients in vats, watch gauges, adjust valves, and collect and weigh sample materials. They also clean tanks, screens, pipes, and other processing equipment. They may repair faulty equipment, keep records, and write reports.

SAMPLE WORK ACTIVITIES

- Operate or tend equipment to:

- . Recover gold, silver, or other minerals from raw ore
- . Separate brown sugar crystals from syrup
- . Remove impurities from kerosene
- . Purify and bleach sugar
- . Refine soybean, cottonseed, and peanut oil
- . Separate oil from an oil refinery sewage system

- . Refine crude wood turpentine
- . Make caustic soda used in cooking woodpulp
- . Process scrap rubber with chemicals
- . Recover uranium from ore
- . Remove impurities from water used in making drugs and cosmetics
- . Remove silt from river water entering an irrigation system

- Mix and blend chemicals
- Dump ingredients in vats
- Turn valves and start pumps
- Add chemicals to solutions
- Adjust temperature controls
- Clear stopped pipelines
- Test sample solutions
- Collect and weigh sample materials
- Drain and clean tanks, screens, pipes, and other equipment
- Replace filters in tanks
- Keep production records and prepare required reports
- Clean equipment, using water and steam

HOURS OF WORK/TRAVEL

- These jobs may require shift work.

SAMPLES OF WORK

- Chemical plants
- Companies that make carbon and lampblack
- Companies that produce coal for products
- Companies that produce compressed gases
- Companies that produce oils and fats
- Dairies
- Drug companies
- Food processing plants
- Farms and other places that use irrigation systems
- Glue manufacturers
- Ore dressing, smelting, and refining plants

- Paper and pulp mills
- Plants that distill liquors
- Plants that produce turpentine and rosin
- Plastics manufacturers
- Public waterworks
- Rubber treatment plants
- Salt refineries
- Sugar refineries
- Tobacco plants
- Wood distilleries

7677 CRUSHING AND GRINDING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to crush, grind, or shape materials for use in products. They work in a wide variety of industries. For example, they may tend equipment used to grind grain into flour, crush soap chips into powder, shape the ends of brake linings, grind lenses, or crush stone. They do such things as load materials into machines, operate conveyors, adjust machine controls, and collect samples for testing. They also may weigh materials, clear machine jams, clean and oil machinery, and keep production records.

SAMPLE WORK ACTIVITIES

- Operate or tend crushing or grinding machines to:
 - Reclaim ore scale
 - Grind grain into meal or flour
 - Clean and hull rice
 - Grind loss into fibers used in making paper pulp
 - Grind cooked wood chips into pulp used to make wallboard
 - Crush and screen soap chips to form powdered soap
 - Grind and dry out gypsum rock
 - Level the surfaces of stones used for building purposes
 - Level the ends of asbestos brake linings
 - Grind the edges of shoe soles to remove grooves
 - Smooth and true bowling balls
 - Grind curves on lens blanks
 - Polish optical elements
 - Grind glass for use in lab instruments
 - Wash, crush, and separate stones to produce sand and gravel
- Move levers to control the flow of material on a conveyor
- Turn valves to add materials
- Open and close spouts to route materials to grinders
- Dump materials into the hopper of a machine
- Clamp articles between the wheels of a buffer
- Lift objects onto a work bench
- Turn wheels to adjust the pressure of grinding rollers
- Inspect products and remove those that are faulty
- Weigh samples of products or materials
- Collect samples of materials for lab tests
- Use a gauge to measure finished objects
- Move filled containers to a storage area
- Clean equipment, using scrapers and cleaning tools
- Grease and oil machinery
- Keep an operating log
- Replace worn grinding rollers, using handtools

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hour requirements may vary from industry to industry. However, in many cases, shift work may be required. Workers involved in continuous processes also may work during weekends.

SAMPLE PLACES OF WORK

- Factories or plants that make or process products such as:

- . Asbestos products
- . Building board
- . Candies
- . Cement
- . Cereals
- . Chemicals
- . Chocolate and cocoa
- . Coal tar products
- . Cork products
- . Corn products
- . Dairy products
- . Felt goods
- . Floor coverings
- . Glass
- . Glue
- . Grains, feeds, and flour
- . Jewelry
- . Optical goods
- . Paint and varnish
- . Paper and pulp
- . Plastic goods
- . Malt liquors
- . Meats
- . Metal alloys
- . Mirrors
- . Rubber goods
- . Salt
- . Soap
- . Sports equipment
- . Sugar
- Ore smelting and refining plants
- Lathing companies
- Sawmills
- Foundries
- Iron and steel mills

7678 SLICING AND CUTTING MACHINE OPERATORS AND TENDERS

These workers operate or tend machines used to slice or cut materials. They work in a wide variety of industries. They use machines to do such things as sliver almonds, shred tobacco, bore holes in stone, trim shoe parts, or cut parts from stock. They generally follow work orders. They install and adjust cutting blades, load or feed materials in machines, adjust controls, and check finished work. They may measure articles, mark cutting lines, sharpen blades, and send samples to a lab for testing. Many workers have other duties as well.

SAMPLE WORK ACTIVITIES

- Operate or tend slicing or cutting machines to:
 - . Dice or sliver nut meats
 - . Cut frozen meats into pieces to be ground
 - . Shred tobacco
 - . Cut materials into smaller pieces for processing
 - . Cut bookmatch blanks from cardboard rolls
 - . Cut paper tubing to size
 - . Drill holes in notebook paper, booklets, and envelopes
 - . Bore holes in blocks of slate or marble
 - . Drill rivet holes in asbestos brake linings
 - . Cut stones for use in honing machines
 - . Cut stacks of fiberglass to length
 - . Cut rubber into specified lengths
 - . Trim the edges of shoe parts
 - . Cut sheets of floor covering to size
 - . Slit plastic or foil sheeting into strips
 - . Trim ragged edges from sports equipment
 - . Cut processed film
- Sharpen blades with a file or bench grinder
- Install machine cutting blades, using handtools
- Use measuring devices and wrenches to space machine cutters
- Adjust the speed of machine blades
- Measure and mark items for drilling
- Position objects to be cut
- Place large items on machines, using a hoist
- Mount rolls of material in a holder
- Thread material through machine
- Feed material into cutters
- Press a pedal to raise blades that cut objects to size
- Pull levers and turn wheels to regulate the machine speed, water flow, and drill speed rolls and guides
- Replace filled containers under machines
- Check finished products for defects
- Send sample materials to a lab for testing

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hour requirements may vary from industry to industry. Workers in factories or plants may work on shifts. Those involved in continuous processes may also work during weekends.

SAMPLE PLACES OF WORK

- Printing and publishing companies
- Nut processing plants
- Food canning and preserving plants
- Slaughterhouses and meat packing plants
- Bakeries
- Dairies
- Photofinishing plants
- Factories and plants that produce:
 - . Abrasive products
 - . Ammunition
 - . Asbestos products
 - . Brick and tile
 - . Building board
 - . Buttons
 - . Candies
 - . Clocks and watches
 - . Corn products
 - . Distilled liquors
 - . Electrical equipment
 - . Electronic products
 - . Felt goods
 - . Glass
 - . Glue
 - . Ice
 - . Macaroni products
 - . Matches
 - . Optical goods
 - . Paper and pulp
 - . Paper goods
 - . Pens and pencils
 - . Plastics
 - . Soup
 - . Sports equipment
 - . Stonework
 - . Tobacco products
 - . Wallpaper

7679 MACHINE OPERATORS AND TENDERS, N.E.C.

These workers operate or tend one or more machines to process products or materials. They work in a wide variety of industries. Their jobs range from cleaning rock used in fertilizers to pumping beer to different sections of a brewery. They may work with food, paper, mineral, glass, rubber, leather, or other types of materials. Typically, they do such things as: operate machine controls; clean, oil, and adjust machinery; load, thread, or pump materials into machines and watch for processing problems.

SAMPLE WORK ACTIVITIES

- Operate or tend one or more machines to:
 - . Remove cloth wrappers from cottonseed cake
 - . Grow sugar crystals to a specified size
 - . Cook and cure meats, such as bacon, hams, and sausage
 - . Cook ingredients used to prepare dog and cat foods
 - . Cure rubber used in firehoses
 - . Mill glue from flour and water
 - . Produce rubber tires
 - . Process oils for use in making hard surface floor covering
 - . Polish plastic buttons
 - . Mark cardboard blanks along lines where they are to be folded or cut to form boxes
 - . Polish and clean glass
 - . Copy sets of pattern cards used to control weaving operations on a loom
 - . Press and shape the toe or heel sections of shoes
 - . Wire panel assemblies used in office machines
 - . Clean finished eyeglasses
 - . Gauge and weigh gun cartridges
 - . Pump beer to various sections of a brewery
- Mix materials, following a formula
- Fit, assemble, or bolt parts together
- Load and unload materials, using a hoist
- Thread material through machine carriers, driers, and rolls
- Shovel materials into a machine hopper
- Control equipment from a control board

- Watch gauges, panel lights, and other indicators
- Listen for warning signals
- Turn screws and knobs to adjust airflow, feed rates, and conveyor belts
- Weigh samples of materials to see if they meet standards
- Inspect machines and equipment for hazards, wear, and leaks
- Collect samples for lab tests
- Test materials and record test results
- Record instrument readings and process conditions
- Drain tanks
- Grease, oil, and repair equipment

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hour and travel requirements may vary from industry to industry. However, in many cases, shift work may be required. Workers involved in continuous processes also may work during weekends.

SAMPLE PLACES OF WORK

- Ore dressing, smelting, and refining plants
- Mining and quarrying companies
- Iron and steel mills
- Nut processing plants
- Dairies
- Slaughtering and meat packing plants
- Bakeries
- Printing and publishing companies
- Factories and plants that produce:
 - . Ammunition
 - . Boots and shoes
 - . Building board
 - . Building materials
 - . Candy products
 - . Canned or preserved foods
 - . Cereals
 - . Chemicals
 - . Chocolate and cocoa
 - . Corn products
 - . Distilled liquors
 - . Electrical equipment
 - . Floor covering
 - . Furniture
 - . Glass products
 - . Graphite
 - . Macaroni products
 - . Malt liquors and beer
 - . Oils and fats
 - . Paper and pulp
 - . Paper goods
 - . Pens and pencils
 - . Rubber goods
 - . Sugar
 - . Tobacco products
 - . Textiles
 - . Sports equipment
 - . Wirework

77 FABRICATORS, ASSEMBLERS, AND HAND WORKING OCCUPATIONS

These workers make, assemble, or process products using handtools or working by hand. They may weld or solder metal parts together or trim excess metal, using torches. Others may sew trimmings, paint toys, or shape molds from wax. Some workers assemble products. They may have a single, repetitive job on an assembly line or they may assemble an entire article. Others process products to be assembled by cleaning, painting, shaping, or soldering, for example.

771 WELDERS AND SOLDERERS

These workers cut or fuse metal and plastic parts. They may use hand-held welding equipment, torches, or solder guns. They may fuse plastic sheets, weld metal parts together, or trim excess metal from products. Others use solder (a soft metal alloy) to join or bond components. They apply solder to surfaces to be joined, then heat the solder and hold the pieces together until the solder is cooled.

7714 WELDERS AND CUTTERS

These workers use hand-held welding equipment and torches to join or cut metal or plastic or parts. They do such things as fuse together plastic sheets, weld metal parts, or trim metal from objects. They may work in a shop, on an assembly line, or at construction sites. They follow blueprints, and work orders. They select the proper torch tips, connect fuel or power lines to torches, position parts to be cut or welded, and guide a flame or an electric arc along welding or cutting lines. They often use measuring devices to position and check their work.

SAMPLE WORK ACTIVITIES

- Fuse together plastic sheets, using a hot air gun
 - . Cut sheets to be joined, using a knife
 - . Use a power sander to sand finished edges
- Attach metal liners to metal insots
 - . Use a hoist to position insots on a conveyor
 - . Clean insots with a solvent and rags
 - . Strap liners to the sides of insots, using wire and a banding machine
 - . Tack-weld liners to the insots, using gas welding equipment
- Straighten metal plates to prepare them for welding, using a torch
 - . Read charts to select the proper torch tips to be used
 - . Screw tips on torches
 - . Connect fuel tanks to torches
 - . Guide a flame along the surfaces of workpieces to heat and expand the metal
 - . Measure workpieces with a straightedge or template
- Weld together parts of products, such as pipelines, cars, boilers, and airplanes
 - . Follow layouts, blueprints, diagrams, and work orders
 - . Position parts to be welded
 - . Turn valves to start the flow of gases to a torch
 - . Light torches and adjust their flames
- Repair broken or cracked metal objects, fill holes, and build up metal parts, using welding or brazing equipment
 - . Clean the joints of workpieces, using a wire brush
 - . Cut, trim, and scrape metal objects
 - . Connect power cables to electrodes
 - . Turn knobs to regulate current used to operate equipment
 - . Guide a flame along a cutting line
 - . Inspect finished workpieces
- Cut worn pieces of metal from bridges
- Take apart cars, machines, or
- Work under contract as an APPRENTICE ARC WELDER

HOURS OF WORK/TRAVEL

- Some of these jobs may involve work at construction sites, where bridges, large buildings, or pipelines are being built. Workers in these jobs may travel to remote sites and spend periods of time away from home.
- Some of these jobs may involve work on an assembly line in a factory or plant. These jobs may require shift work.

SAMPLE PLACES OF WORK

- Manufacturing companies, including those that make:

- . Boilers
- . Heavy machinery
- . Metal alloys
- . Plastic products

- . Ships
- . Vehicles
- . Welding shops

- Construction companies

7717 SOLDERERS AND BRAZERS

These workers use hand-held soldering or brazing equipment to join parts of metal products. They clamp parts together and apply solder with a torch. After the part has cooled they unclamp the part and inspect it. They also may dip parts in molten solder to bond them, or fill holes or seams with hot solder. They use flame torches and other heating devices. Some use devices that solder parts using sound waves, rather than heat. Some use hoists, drills, and other power tools to position and finish workpieces.

SAMPLE WORK ACTIVITIES

- Solder ribs to shotgun barrels to form double barrels
 - . Brush flux onto the barrels to prepare them for soldering
 - . File the butts of barrels and fit them together
 - . Heat the gun barrel assemblies in an oven
 - . Melt and flow solder along the edges of the rib and barrels, using a gas torch
 - . Position the barrels and ribs and solder them together
 - . Drill vent holes in the barrels, using a bench drill
 - . Move the soldered barrels through acid bath tanks and rinse water, using an overhead twist
- Dip metal parts in molten solder to bond them together
 - . Hold parts together until the solder has set
 - . Place clamped parts into a furnace to solder them together
- Solder together parts of metal products on a production line, using a hand soldering iron and soft solder
 - . Place work pieces in fixtures (holding devices)
 - . Guide a soldering iron and solder along seams
 - . Fill holes, dents, and seams, using solder and a gas torch
 - . Rub a stick of solder on the heated area of a metal object and melt the solder with a torch flame

HOURS OF WORK/TRAVEL

Some jobs may require shift work.

SAMPLE PLACES OF WORK

- Manufacturing companies
- Welding shops

772 ASSEMBLERS

ASSEMBLERS put together parts of manufactured products. They may work with hundreds of other workers to assemble a single finished product. Many work on items that move past their work stations on conveyors. One worker may start nuts on bolts, while the next worker may tighten the nuts with a wrench. Other ASSEMBLERS do more delicate work. Some make entire products. Their work tools depend upon the type of products. Some use heavy cranes and power tools. Others use tweezers, tiny cutters, and magnifying lenses. Often, they read blueprints and use measuring devices.

SAMPLE WORK ACTIVITIES

- Brush solutions on silverware to make the designs stand out
- Join parts such as handles, blades, gears, and springs to make knives, razors, or can openers
- Assemble parts of perfume bottles
- Put together motorcycle parts
- Assemble drawers used in metal file cabinets
- Attach instruments to aircraft control panels
- Assemble dental or barber chairs
- Assemble metal bedsteads
- Assemble plumbing fixtures, such as faucets and shower heads
- Fasten together parts of vending or slot machines
- Build wire bird cages, using handtools and a drill press
- Bend wire to form frames for mattresses
- Assemble electric motors, relays, and thermometers
- Solder metal pins in the base of false teeth
- Fit lens parts together
- Attach cords, dials, and hands to clocks
- Assemble parts turbines and motors
- Assemble appliances and power tools
- Assemble musical instruments, such as drums or violins
- Assemble keyboards for pianos or organs
- Assemble toys
- Assemble sports equipment, such as golf clubs and skis
- Assemble pens and pencils
- Assemble costume jewelry
- Assemble fittings on bombs
- Join parts, such as bowls and stems, to make corncob pipes
- Assemble filters used in heating and cooling systems
- Assemble rubber goods, such as ice bags and rubber gloves
- Assemble wood products, such as wooden cases, closets, and doors
- Assemble garment parts into bundles to be distributed to production workers
- Assemble hat and car parts
- Assemble trailer bodies
- Mount wheels and tires on mobile homes

HOURS OF WORK/TRAVEL

- ASSEMBLERS often are required to work on shifts.

SAMPLE PLACES OF WORK

- Manufacturing plants, including those that make:

- . Aircraft
- . Ammunition
- . Appliances
- . Balances and scales
- . Boots and shoes
- . Clocks and watches
- . Coin machines
- . Cutlery and tools
- . Electrical equipment
- . Engines and turbines
- . Farm equipment
- . Furniture
- . Hats and caps
- . Jewelry
- . Firearms
- . Leather products
- . Machinery
- . Medical materials
- . Motor vehicles
- . Motorcycles
- . Musical instruments
- . Office machines
- . Optical goods
- . Pens and pencils
- . Plumbing supplies
- . Refrigeration equipment
- . Rubber goods
- . Ships and boats
- . Silverware
- . Sports equipment
- . Toys
- . Transportation equipment
- Foundries
- Iron and steel mills
- Retail stores
- Machine shops
- Woodworking shops
- Construction companies

774 FABRICATORS, N.E.C.

These workers help process products or materials. They work in a wide variety of industries. Their duties range from filling pillows with feathers to sanding furniture parts. They often perform tasks to help prepare products for further processing. For example, some shape parts of musical instruments. They may clean and paint motor parts before they are assembled. Some wind fabric onto frames for shipment. These workers do much of their work by hand.

SAMPLE WORK ACTIVITIES

- Close the ends of filled meat casings with metal clips and string so they can be hung
- Shape candy against a spatula to form candy kisses
- Wind fabric onto frames to prepare it for shipment
- Coat sunglass tips with plastic to protect them
- Coat clock dials with an anti-static solution
- Clean and paint motor parts to prepare them for further processing
- Form and shape bell necks for brass musical instruments
- Comb, brush, and cut dolls' hair
- Press together layers of rubber footwear as they pass by on a conveyor line
- Sand furniture parts to prepare them for finishing
- Dip glass beads into lacquer to make them look like pearls
- Make pressed glassware from molten glass
- Fill pillows, cushions, and comforters with wool or down
- Join shoe parts, using cement
- Fold and glue paper blanks to make envelopes
- Collect and store used building materials, such as lumber and plumbing fixtures

HOURS OF WORK/TRAVEL

- Many of these jobs require shift work.

SAMPLE PLACES OF WORK

- Manufacturing companies, including those that make:

- . Ammunition
 - . Barrels
 - . Boots and shoes
 - . Buttons
 - . Candies
 - . Carbon and lampblack
 - . Clocks and watches
 - . Cork products
 - . Cutlery and tools
 - . Electrical equipment
 - . Garments
 - . Jewelry
 - . Knit goods
 - . Malt liquors
 - . Medicines and drugs
 - . Oils and fats
 - . Optical goods
 - . Paper goods
 - . Pens and pencils
 - . Pottery and porcelain
 - . Sports equipment
 - . Synthetic fibers
 - . Textiles
 - . Tinware
 - . Tobacco products
 - . Veneer and plywood
- Mining and quarrying companies
 - Iron and steel mills
 - Ore dressing, smelting, and refining plants
 - Foundries
 - Slaughter houses and meat packing plants
 - Grain and feed mills

775 HAND WORKING OCCUPATIONS

These workers perform jobs that must be done by hand. They may sew trimmings and buttons or weave cloth. Others cast or mold products in wax, plastic, or plaster. Some shape dough or archery bows. Some roll and trim cigars. They may dip candy, tint fishing lures, or stain and wax furniture. Some engrave or etch letters in metal or letter posters. Handworkers may also grind and polish watch parts, plastic eyes for implants, or remove defects in molds.

7752 HAND SEWING OCCUPATIONS

People in these jobs sew or weave items such as fabric or cloth, using handtools or hand-held power tools. Some mend torn or damaged items. Others sew trimmings, casings, stuffed toys, button holes, or shoes.

SAMPLE WORK ACTIVITIES

- Hand sew cloth, braid, or silk to make ornaments for dresses and hats
- Lay out and sew together materials such as net or gauze to make foundations for wigs
- Sew umbrella covers to frames
- Pin fake flowers and ribbons on hats
- Inspect materials for tears and defects
- Mend holes in materials
- Pound down the soles of shoes, using a shoemaker's hammer
- Hook rugs, using a hand-held power tool
- Sew sections of animal intestine to form casings for lunch meat

HOURS OF WORK/TRAVEL

- These jobs do not require travel.
- Generally, these jobs involve a standard 35-40 hour work week. However, shiftwork may be required in some jobs.

SAMPLE PLACES OF WORK

- Industries that make such products as hosiery, carpet and rugs, belts, hats, shoes or umbrellas
- Any industry that makes products that are sewn together

7753 HAND CUTTING AND TRIMMING OCCUPATIONS

People in these jobs use handtools and hand-held power tools to cut and trim articles. They work in a variety of industries and with a variety of materials. For example, they may butcher livestock, bone meats, cut grooves in stone, cut mirror glass to size, make buttonholes for shoes, or trim hat brims. Some jobs require that workers be able to follow layout sheets or working drawings and use measuring devices.

SAMPLE WORK ACTIVITIES

- Use handtools or hand-held power cutting tools to:
 - . Butcher hogs and cattle
 - . Remove coarse hairs from animal pelts
 - . Cut grooves in stones used to grind grain
 - . Cut goldleaf sheets to size
 - . Cut metal mesh to make watchbands
 - . Cut numerals in the faces of watch dials
 - . Cut parts for valves, radios, and footwear from rubber sheeting, plastic, or cork
 - . Cut veneer samples and glue them on display boards for use by sales workers
 - . Lay out and cut woodstock for boat parts
 - . Cut slabs of stone into blocks used for stone walls
 - . Split rough stone into paving blocks or rubble
 - . Cut mirrors to a specified size and shape
 - . Cut chips and scratches from glass sheets
 - . Shape or trim garment parts
- Lay out, mark, and cut parts for leather belts, cases, or garments
- Fold and shape ribbon sections to make bows
- Trim excess material from hat brims
 - . Make button holes for shoes
 - . Cut and mount photographic film
- Work under contract as an **APPRENTICE** while learning the **HAND CUTTER'S** craft

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Construction companies
- Farms
- Printing and publishing companies
- Slaughtering houses and meat packing plants
- Food canning and preserving plants
- Photofinishing plants
- Companies that make:
 - . Aircraft
 - . Boots and shoes
 - . Brick
 - . Buttons
 - . Canvas goods
 - . Clocks and watches
 - . Corn products
 - . Cutlery and tools
 - . Fur goods
 - . Furniture
 - . Glass products
 - . Gold leaf and foil
 - . Hats and caps
 - . Hosiery
 - . Jewelry
 - . Knit goods
 - . Leather
 - . Mirror and picture frames
 - . Plastic products
 - . Railroad cars
 - . Ships and boats
 - . Stonework
 - . Veneer and plywood

7754 HAND HOLDING AND CASTING OCCUPATIONS

People in these jobs mold or cast products or parts, using hand-held tools. They may use wax, plaster, concrete, metal, plastic, or other materials to make articles. They make items such as plaster dies, concrete vaults, wax candles, or metal parts. They assemble molds, measure and mix materials, pour or feed materials into the molds, and clean and finish cast articles. They may move large molds with hoists, heat metal or wax in melting pots, engrave letters or designs on molds or castings, and clean used molds.

SAMPLE WORK ACTIVITIES

- Use handtools or hand held-power tools to:
 - . Cast parts for batteries from molten lead
 - . Cast needle assemblies used in knitting machines
 - . Form plaster molds used to make metal castings
 - . Mold fake marble into objects, such as desk sets and penholders
 - . Encase aircraft control units in plastic to protect them from dampness
 - . Cast concrete pipe
 - . Cast plaster ashtrays and pissybanks
 - . Cast concrete burial vaults
 - . Prepare molds for use in casting gold rings
 - . Cast plastic reproductions of models and patterns
 - . Cast concrete pipe sections and manhole covers
- Load materials into a melting kettle
- Light burners and set controls to melt metal or wax
- Mix plaster powder and water, according to a formula
- Bolt mold halves together
- Pour molten metal into molds
- Measure out required amounts of plaster
- Pour plaster into molds
- Adjust controls to feed wet concrete into spinning molds
- Place molds in preset ovens for a specified time
- Use a hoist to move concrete molds to a curing area
- Remove articles from molds, using pliers
- Clean molds, using a brush
- Cut excess material from molded items, using a knife, saw, and grinder
- Repair cracks and broken edges of molds
- Sand plaster castings to smooth their surfaces
- Dip castings in an acid and water solution to clean them
- Engrave symbols, letter, or numbers on finished units so that they can be identified
- Polish cast parts with a felt-covered brick

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Factories, plants, and shops that produce:
 - . Aircraft and aircraft parts
 - . Brick and tile
 - . Candles
 - . Chemicals
 - . Concrete products
 - . Electrical equipment
 - . Jewelry
 - . Models and patterns
 - . Needles, pins, and related products
 - . Plastic materials
 - . Pottery and porcelain
 - . Rubber goods
 - . Statue and art goods
- Foundries

7755 HAND FORMING AND SHAPING OCCUPATIONS

People in these jobs form or shape materials into products or parts, using hand-held tools. They work in a variety of industries. They may shape dough, candy, clay, fabric, glass, metal, or other material. They may shape material by rolling it to a desired thickness; guiding it through a machine; or cutting, kneading, filing, or pressing it. They use tools such as knives, scissors, hand irons, sanders, or torches. They may weigh and mix ingredients. They may check finished products for defects and may keep production records.

SAMPLE WORK ACTIVITIES

- Use handtools or hand-held power tools to:
 - . Form dough for bread, buns, and other bakery products
 - . Form almond paste into decorative shapes, such as fruits and flowers
 - . Knead soft candy into rolls for bonbons
 - . Prepare clay for forming into pottery and porcelain ware
 - . Press caps or hats over heated hat blocks to shape, smooth, or finish them
 - . Form pleats in fabric
 - . Stretch and shape metal for use in making jewelry
 - . Shape and smooth metal surfaces of molds
 - . Glue feathers onto the shafts of archery arrows
 - . Shape archery bows
 - . Make brooms from broomcorn fibers
 - . Repair defects in glassware
 - . Cut glass tubing to specified lengths
 - . Roll cigars
- Add ingredients to mixtures
- Roll materials to a desired thickness
- Pour materials into molds
- Press and rub materials to shape them
- Press articles with an electric iron
- Force handtools against metal to bend and stretch the metal
- Shape material in a mold
- Move a torch flame over defective areas in glassware to soften the glass for reworking
- Mount workpieces in a machine holder
- File and sand articles to a specified shape and smoothness
- Guide materials through a machine
- Buff articles bows to a smooth finish
- Cut materials into pieces with a knife or handcutter
- Weigh items on a scale
- Examine finished workpieces for defects
- Keep production records
- Place articles in steam chambers

HOURS OF WORK/TRAVEL

- These jobs may require shift work. Workers in bakeries and other plants that operate around the clock may work during weekends.

SAMPLE PLACES OF WORK

- Factories, plants or shops that produce:
 - . Bakery products
 - . Brushes and brooms
 - . Candies
 - . Furniture
 - . Glass
 - . Pottery and porcelain
 - . Sports equipment
 - . Springs
 - . Tobacco products
 - . Trimmings and embroidery work
- Woodworking shops
- Machine shops

7756 HANDPAINTING, COATING, AND DECORATING OCCUPATIONS

These people paint, coat, or decorate articles by hand. They work in a variety of industries. They read work orders or look at drawings to determine the work to be done. They may take objects apart and clean them before they work on them. They may measure and mix ingredients to make coating solutions or paints of a certain color. They work with their hands and use tools such as brushes, sprayers, cloths, tubes, stencils, and sandpaper.

SAMPLE WORK ACTIVITIES

- Use handtools or hand-held power tools to:
 - . Dip candy centers, fruits, or nuts into coatings
 - . Decorate foods with colored icings or pastry cream
 - . Apply glaze to clayware
 - . Apply latex backings to rugs
 - . Cover watch dials with lacquer
 - . Brush radioactive paint on watch hands so the hands will be visible in the dark
 - . Brush protective coverings on jewelry parts
 - . Paint stripes or letters on bicycle frames
 - . Paint store dummies to look like they are dressed
 - . Spray foam on shower stalls
 - . Tint toys, dolls, and pottery
 - . Rub oil or wax on furniture
 - . Stain mirror and picture frames
 - . Glaze tile
 - . Paint over defects in photograph negatives
- Study work orders or sketches to determine work to be done
- Take articles apart
- Place parts in a degreasing tank to remove oil and dirt
- Clean objects, using an airhose
- Measure and mix ingredients
- Swirl items in a coating mixture
- Force material through a nozzle to form lines, letters, figures, or designs
- Spread material with a brush or by hand
- Smooth surfaces, using sandpaper
- Spray gun to spray items with coating material
- Clean paint from ceilings and walls
- Mark areas to be stamped, lettered or decorated, using a rule and template
- Mix paint and match colors
- Use stencils, masks, and tape to spray designs on objects
- Dip parts into vats of stain
- Rub stained surfaces with a cloth to wipe off excess stain

HOURS OF WORK/TRAVEL

- These jobs may require shift work. Workers in bakeries, photofinishing plants, and other plants that operate around the clock may sometimes have to work on weekends. Some jobs, such as those in motor vehicle plants, may require some overtime work.

SAMPLE PLACES OF WORK

- Factories and plants that produce:
 - . Ammunition
 - . Bakery products
 - . Barrels
 - . Boots and shoes
 - . Buttons
 - . Brick and tile
 - . Candy products
 - . Carpet and rugs
 - . Clocks and watches
 - . Electrical equipment
 - . Firearms
 - . Fur goods
 - . Furniture
 - . Glass products
 - . Jewelry
 - . Leather products
 - . Lighting fixtures
 - . Mirrors
 - . Models and patterns
 - . Paper goods
 - . Picture frames
 - . Plastic products
 - . Pottery and porcelain
 - . Sports equipment
 - . Trimmings and embroidery
 - . Toys and games
 - . Wooden boxes
- Woodworking shops

- Auto paint shops
- Retail stores
- Printing and publishing companies

7757 HAND ENGRAVING AND PRINTING OCCUPATIONS

People in these jobs engrave, print, or etch letters and designs on objects by hand. They use handtools or hand-held power tools to engrave printing plates, etch trademarks on silverware or print lettering on posters. They use drawing and measuring tools and may cut, sand, coat, or clean articles before they engrave or imprint them. They also check their work for defects and may keep production records.

SAMPLE WORK ACTIVITIES

- Use handtools or hand-held power tools to:
 - . Print and etch patterns to make printed circuit boards
 - . Engrave designs or lettering on nameplates, stamps, or seals
 - . Etch trademarks on knives and forks
 - . Imprint information on eyeglass frames
 - . Print numerals onto clocks or watches
 - . Engrave brand names on plastic bowling balls
 - . Print designs on towels, sheets, and pillowcases
 - . Print lettering and designs on posters, targets, toys, or furniture
- Follow work orders, shop sheets, or verbal instructions
- Cut materials to size, using shears
- Dip objects in chemical solutions to clean them
- Position patterns on workpieces, using measuring devices
- Use mechanical drawing tools to draw designs
- Dip objects in acid to etch exposed designs
- Lower a cutting tool onto objects to be engraved
- Expose and develop film
- Examine workpieces for defects
- Keep production records

HOURS OF WORK/TRAVEL

- These jobs may require shift work. Some jobs may require some overtime work as well.

SAMPLE PLACES OF WORK

- Companies that make electronic devices
- Engraving shops
- Companies that make cutlery and tools
- Machine shops
- Companies that make balances and scales
- Optical goods manufacturers
- Plants that produce clocks and watches
- Companies that manufacture sports equipment
- Movie studios
- Printing and publishing companies
- Textile mills

7758 HAND GRINDING AND POLISHING OCCUPATIONS

People in these jobs grind and polish products or parts to smooth them or remove defects. They use grinding wheels, sandpaper, and polishing stones. They work in a variety of industries. They may repair defects in molds used for castings, polish plastic eye implants, grind watch parts, buff scratched mirrors, or file marble slabs.

SAMPLE WORK ACTIVITIES

- Remove defects from molds, using handtools and power tools
 - . Inspect surfaces for defects, such as pits and holes
 - . Position molds for work, using a hoist
 - . Repair defects in molds, using hammers, drills, chisels, and routers
 - . Smooth the insides of molds with a file, emery paper, or steel wool
- Grind and smooth the surfaces of items, such as car parts
 - . Look at and feel surfaces of workpieces to detect defects
 - . Select abrasive belts or wheels needed for jobs
 - . Move a grinder over the surfaces of parts to remove scratches
 - . Polish ground areas with a fine abrasive to smooth surfaces
 - . Replace worn abrasive disks, wheels, and belts
- Polish plastic implants used to fill the eye sockets of people who wear fake eyes
- Polish watch parts to a specified thickness, using a polishing stone
- Smooth the surfaces of jewelry articles, using an abrasive stone
- Repair surface defects in plastic mirror frames, using putty, sandpaper, and paint
- Buff scratched areas from mirrors, using a felt block and polishing compound
- Smooth the edges of marble or slate slabs with a fine file
- Remove rough edges from glassware, using a belt grinder
- Apply dye to shoes to produce a glossy finish, using a brush or sponge
- Grind and polish molded fiberglass parts to prepare them to be assembled into boats

HOURS OF WORK/TRAVEL

- Some of these jobs may require shift work.

SAMPLE PLACES OF WORK

- Factories and plants that make products such as:
 - . Boots and shoes
 - . Clocks and watches
 - . Furniture
 - . Glass products
 - . Jewelry
 - . Needles and pins
 - . Oils and fats
 - . Stonework
- Shoe shine shops and stands
- Machine shops
- Ship building firms

7759 HAND WORKING OCCUPATIONS, MISCELLANEOUS

People in these jobs work with their hands, handtools, or hand-held power tools to help make or process products or materials. They work in a wide variety of jobs and settings, and perform a variety of tasks. For example, they may remove stains from clothing at a laundry, dye shoes for customers at a shoe shop, fill ladles with molten metal at a foundry, or retread tires at a tire shop.

SAMPLE WORK ACTIVITIES

- Identify stains in garments before they are laundered
- Apply chemicals to clothing to remove stains
- Clean lampshades, using a brush, sponge, and cleaning solution
- Dye or tint shoes for customers of a shoe repair shop
- Spray dyes on leather gloves and jackets to restore their original color
- Repair umbrellas, using handtools
- Pour molten metal from ladles into molds to form indots
- Weigh and mix seasonings to prepare spice mixes
- Remove the inside organs of slaughtered cattle
- Fold cloth by hand to make it easier to pack
- Thread stitching machines, using a hook
- Form wax impressions of patients' teeth for use by a dentist
- Adjust and grease parts of electric alarm systems
- Shape and smooth archery bows and tennis racket frames
- Mold rubber tread onto tire casings to retread tires
- Glue felt to the insides of drawers used to store silver
- Staple padding to boxspring assemblies
- Fold parachutes to prepare them for further processing
- Make cartons and boxes from paperboard material

HOURS OF WORK/TRAVEL

- These people work in many jobs and settings. Work hour and travel requirements vary from job to job and from industry to industry. Talk with a counselor if you wish information about a particular job in this group.

SAMPLE PLACES OF WORK

- Factories, plants, and shops that make:

- . Boots and shoes
- . Canvas goods
- . Clocks and watches
- . Cords and twine
- . Cosmetics
- . Electrical equipment
- . Glass products
- . Hats and caps
- . Matches
- . Mattresses

- . Medicines and drugs
- . Mirrors
- . Pottery and porcelain
- . Processed foods
- . Signs
- . Synthetic fibers
- . Textile products
- . Tobacco products
- . Trimmings and embroidery
- . Waste and battins

- Laundries
- Dry cleaning plants
- Shoe repair shops
- Furniture cleaning businesses
- Iron and steel mills
- Slaughtering houses and meat packing plants
- Food canning and preserving plants
- Bakery shops and plants
- Medical services
- Printing and publishing companies
- Foundries
- Retail stores

78 PRODUCTION INSPECTORS, TESTERS, SAMPLERS, AND WEIGHERS

These workers inspect and test products to insure that they meet specifications and quality control standards. They may test chemicals and drugs, ores, or coffee, for example. They keep records of weight, quality, and test results of products. They may grade and sort such products as logs, jewelry, and laundry. Some workers are expeditors who keep other workers supplied with materials, relay instructions, and keep production records, and inspect work areas.

782 PRODUCTION INSPECTORS, CHECKERS, AND EXAMINERS

People in these jobs check products or objects to be sure they are made correctly, or are in good condition. Some sort, group, or classify objects. These workers are found in a variety of settings, including laundries, factories, and most packing plants. Depending upon the job, they may check products while they are being assembled or before they are shipped out for sale.

SAMPLE WORK ACTIVITIES

- Check laundry to make sure it is clean and folded correctly before it is returned to customers
- Check cigarette filter tips to be sure they are the right size before they are put on cigarettes
- Check and adjust the temperature in meat storage coolers
- Check for damage and sort pieces of leather for use in wallets, purses, and shoes
- Use hand tools and optical equipment to check eyeglasses before they are shipped to customers
- Use electrical test equipment, soldering guns, and small handtools to check and repair electronic circuit boards for hand calculators
- Check and make minor corrections in cloth coverings for furniture

HOURS OF WORK/TRAVEL

- These jobs do not require travel.
- Generally, these jobs involve a standard 35-40 hour work week. However, shiftwork may be required in some jobs.

SAMPLE PLACES OF WORK

- Laundries and drycleaning shops
- Factories that make cigars or cigarettes
- Factories that make and bottle soft drinks, liquor, or beer
- Slaughterhouses
- Lumber companies
- Businesses that make building materials, such as shingles and wallboard
- Furniture manufacturers
- Textile mills
- Businesses that make or repair optical goods such as eyeglasses and binoculars
- Factories that make or repair clocks and watches
- Businesses that make or repair electronic products, such as calculators and computers
- Any business that checks its products while they are being put together or before they are shipped out for sale.

783 PRODUCTION TESTERS

These workers test materials and products to see that they meet standard requirements. They perform chemical, electrical, mechanical, or other tests. They work in a variety of industries. They test electrical equipment, glass, raw ores, car parts, or any of hundreds of other items.

SAMPLE WORK ACTIVITIES

- Test phonograph records, using special sound equipment
- Test electrical circuits
- Test brine in olive barrels for salt content
- Compile taste preference information on whiskies
- Test cigarettes to make sure that they meet standards
- Test samples of pulp and paper, using standard testing equipment and chemicals
- Inspect and test plastic bags for defects, strength, and clearness of print
- Test dyed yarn to determine the fastness of color
- Tend a machine that tests the strength of chains

- Test fibers and yarns at various stages of processing
- Operate typewriters to test their performance
- Operate sound-testing equipment to detect defects in ball bearing assemblies
- Set up and operate new sewing machines to test them before they are shipped
- Heat and cool thermometers to test their accuracy
- Test and adjust phonograph turntables
- Test motor assemblies to locate short circuits
- Test tires and bulletproof gas tanks used on military vehicles
- Test gun cartridge primers
- Drive experimental cars, trucks, or busses to collect performance data
- Test refrigeration units for defects
- Test oil well casings for high-pressure leaks

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hours and travel requirements vary. Workers in factories or plants may work on shifts. Those involved in continuous processes may work during weekends.

SAMPLE PLACES OF WORK

- Factories and plants that produce:

- | | |
|----------------------------|----------------------------|
| . Ammunition | . Lighting fixtures |
| . Automobiles | . Machinery |
| . Brick and tile | . Medicines and drugs |
| . Building board | . Metal alloys |
| . Chemicals | . Motorcycles and bicycles |
| . Clocks and watches | . Office machines |
| . Coin machines | . Paper and pulp |
| . Compressed gases | . Paper goods |
| . Cosmetics | . Phonographs |
| . Distilled liquors | . Railroad equipment |
| . Electrical equipment | . Springs |
| . Felt goods | . Synthetic fibers |
| . Fordings | . Textiles |
| . Glass and glass products | . Tinware |
| . Hosiery | . Tobacco products |

- Ore dressing, smelting, and refining plants
- Foundries
- Mining and quarrying companies
- Dairies
- Food processing plants
- Woodworking shops

784 PRODUCTION SAMPLERS AND WEIGHERS

These people detain samples of products or materials and weigh and test them to make sure that they meet certain standards. They perform tests on the samples or prepare them for testing by other workers. The products and materials they work with range from iron ore and metal sheets to cookie crumbs and coffee. Some workers weigh specified amounts of raw materials for use in making products. Many jobs require that workers record information about samples taken, such as their weight, quality, test results, and color.

SAMPLE WORK ACTIVITIES

- Crush samples of zinc ore and weigh them on a platform scale
- Scoop samples of ore from a conveyor belt so they can be tested in a lab
- Weigh ore samples on a scale, dry them in an oven, and then reweigh them to check their moisture content
- Place samples in labeled containers for use in lab tests
- Use shears or a power punch to cut samples of metal sheets
- Drill holes in castings to get shavings for lab tests

- Check the moisture content of wood chips used to make pulp
- Use a pick and shovel to dig samples of coal and pitch used to make carbon electrodes
- Record the types and amounts of samples tested
- Compare samples of copper ore against colors on a chart
- Use a PH meter to measure the acid content of ore samples
- Record lab test results on product control forms
- Weigh strips of metal to get amounts needed by a furnace operator
- Weigh set amounts of glucose and flavoring syrup for use in making chewing gum
- Gather packages of cookies from a conveyor belt to weigh and test them
- Test the acid content of crumbled crackers
- Weigh sacks of coffee and dump them into chutes that lead to coffee cleaning machines
- Mix fertilizer samples to prepare them for lab tests
- Weigh lawnmower cutting blades and sort them into sacks so that blades of equal weight will be mounted on each mower
- Keep records of film tested and the test results
- Record the weight of bowling balls on the boxes in which they will be packaged
- Tend equipment that measures the amount of coal dust in the air in an underground mine

HOURS OF WORK/TRAVEL

- These workers are found in many different jobs and locations. Their work hours may differ, depending upon the specific job.

SAMPLE PLACES OF WORK

- Ore refineries
- Factories that make cigars, cigarettes, and pipe tobacco
- Factories that make vegetable oils
- Chemical laboratories
- Textile mills
- Sports equipment manufacturers
- Factories that make bullets and other ammunition
- Mining and quarrying companies
- Iron and steel mills
- Paper manufacturing plants
- Cookie and cracker manufacturing plants
- Chewing gum factories
- Electronic equipment manufacturing companies

785 GRADERS AND SORTERS, EXCEPT AGRICULTURAL

These workers examine articles or materials and then sort them based on size, shape, color, fineness, or some other standard. They grade and sort raw materials and parts to be used in making or processing goods. They also may grade and sort finished products. They work in a variety of industries and settings. For example, they may sort ironed flatwork at a laundry, or grade rice as it is unloaded from freight cars. They may sort jewelry items for inventory purposes, or grade and sort logs for use in making lumber.

SAMPLE WORK ACTIVITIES

- Fold, stack, count, and wrap ironed flatwork at a laundry
- Grade logs in a sorting yard, millpond, or log deck
- Examine animal carcasses (bodies) to determine their grade or sales value
- Grade unhulled rice as it is unloaded from freight cars
- Sort bricks, roofing tile, and sewer pipe according to form and color
- Inspect sheets of paper for processing defects
- Classify cloth into grades according to the number of defects
- Sort metal buckles and parts according to size and kind, and remove bent or broken ones
- Sort jewelry articles, such as pins, emblems, and rings, for inventory purposes
- Sort diamonds according to size for use in watches, using a sieve, loupe, and measuring instruments
- Arrange and stack printed sheets on a table according to size, weight, color, and number

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hour requirements vary, but may include shift work. Generally, these jobs do not require travel.

SAMPLE PLACES OF WORK

- Factories and plants that produce:

- | | |
|----------------------|-------------------------|
| . Baskets | . Hosiery |
| . Boots and shoes | . Leather goods |
| . Brick and tile | . Metal alloys |
| . Brushes and brooms | . Minerals |
| . Buttons | . Optical goods |
| . Clocks and watches | . Paper goods |
| . Furniture | . Pottery and porcelain |
| . Garments | . Synthetic fibers |
| . Gloves and mittens | . Tobacco products |
| . Hats and caps | . Veneer and plywood |

- Laundries and dry cleaning plants
- Lathing companies
- Sawmills
- Food canning and preserving plants
- Wholesale distributors
- Woodworking shops
- Photofinishing plants
- Printing and publishing companies

787 PRODUCTION EXPEDITERS

PRODUCTION EXPEDITERS help keep work in factories moving smoothly. They see that workers are kept supplied with needed materials. They inspect work stations, relay instructions to workers, and inspect finished work. They may locate and gather needed parts or supplies and notify management of defective tools or equipment. They may also keep production records, instruct new workers, and help assemble products.

SAMPLE WORK ACTIVITIES

- Coordinate the flow of material through processing sections of a plant
- Watch processing procedures
- Tell workers to speed up, slow down, or cease operations to keep an even flow of work through the plant
- Hand out materials to production workers
- Inspect finished work
- Mark products that have been inspected and rejected and return them for repairs
- Look for conditions that slow down work on assembly lines
- Inform workers of their supervisor's instructions
- Notify supervisors of defective tools, equipment, and materials
- Make sure that each assembly line has required materials
- Help assemble products when necessary
- Keep production records

HOURS OF WORK/TRAVEL

- Many factories and plants operate on an 8 hour shift schedule. Some workers may be required to work the evening or night shift.

SAMPLE PLACES OF WORK

- Factories and plants, including:

- . Automobile manufacturers
- . Boot and shoe manufacturers
- . Food processing plants
- . Hat and cap manufacturers

B099 TRANSPORTATION AND MATERIAL MOVING OCCUPATIONS

These workers operate equipment to move people or materials. They may drive buses or taxis, fly planes, or navigate ships. They may drive trucks to deliver goods along a route or to transport goods long distances. Some operate hoists and cranes to fill ship holds or position equipment or materials at a construction site. They use bulldozers, dredges, shovels, and graders to carry out construction or mining operations.

81 SUPERVISORS: TRANSPORTATION AND MATERIAL MOVING OCCUPATIONS

These workers supervise others who operate transportation and material moving equipment. They may supervise workers who operate equipment at construction or mining sites, ship yards, oil fields, or railroad yards. They may dispatch busses or delivery trucks. Others see to it that train cars are added or removed at the proper points. Supervisors plan work procedures and schedules, assign duties, prepare reports, and keep work records.

811 SUPERVISORS: MOTORIZED EQUIPMENT OPERATORS

These workers supervise train crews or motor vehicle operators. They may work as conductors or yardmasters to see that passengers and freight reach their destinations safely and on time. Others may plan routes and schedules for trucking companies or public transportation systems. They assign duties, interpret company policies to workers, and supervise work. They dispatch vehicles, keep business records, write reports, and arrange maintenance services.

8111 SUPERVISORS: MOTOR VEHICLE OPERATORS

These people supervise workers who operate vehicles to transport people or materials. These workers include: sales route drivers, bus and trolley operators, tank-truck drivers, and garage attendants. They plan routes, schedules, and deliveries. They interpret company policies to workers, assign them duties, and oversee their work. They keep business and personnel records and may write work reports. They oversee the loading and dispatching of vehicles and arrange maintenance services. They may also hire, train, and fire workers.

SAMPLE WORK ACTIVITIES

- Supervise the activities of sales route drivers
 - . Plan routes and schedule drivers, vehicles, and deliveries
 - . Record workers' time for payroll records
 - . Inform drivers of the location of accounts and the procedures for making collections
 - . Oversee the loading and dispatching of trucks
- Supervise the activities of workers who operate buses, transit coaches, or trolleys in a city
 - . Record the movement and location of vehicles and road crews
 - . Receive telephone or radio reports of accidents, delays, fires, and equipment breakdowns
 - . Dispatch orders for equipment repair
 - . Keep records of schedules runs, the numbers of vehicles, and the names of drivers
 - . Record calls and emergencies and write accident reports
- Supervise workers who load and deliver petroleum products
 - . Review shipping orders to prepare delivery schedules for truck drivers
 - . Compile and submit reports to a regional office
 - . Set up a maintenance program for tank trucks
- Supervise operations at a car storage garage

- Plan work schedules
- Assign duties to parking lot attendants
- Keep daily records of money

- received; services performed and accidents reported
- Advise customers of services available and insurance rules

HOURS OF WORK/TRAVEL

- STORAGE GARAGE MANAGERS and BUS AND TROLLEY DISPATCHERS may sometimes be required to work during evenings and weekends.

SAMPLE PLACES OF WORK

- Industrial firms
- Oil and gas distribution centers
- Public Transportation systems
- Trucking firms
- Warehouses and storage firms
- Wholesale and retail firms

8113 RAILROAD CONDUCTORS AND YARDMASTERS

These workers are in charge of train and yard crews. They see that passengers and freight get to their destinations safely and on time. Those assigned to freight trains keep records of each car's contents and destination and make sure that cars are added or removed from the train at the proper points, along a route. Those assigned to passenger trains collect tickets and fares, answer passengers questions, and signal the engineer when to pull out of the station.

SAMPLE WORK ACTIVITIES

- Direct traffic on a section of a railroad line
 - Read train orders and schedules to find out when trains will arrive and leave
 - Watch a panel board that lights up to show the location of trains
 - Control track switches and traffic signals
 - Reroute or stop trains to prevent accidents
 - Talk by phone with crew members to inform them of changes in train orders and schedules
 - Record the time each train reaches a certain point
- Direct workers who make up trains and switch traffic at a railroad yard
 - Review train schedules and switching orders to determine what tracks can be used
 - Direct traffic to specific tracks
 - Review shipping records that show what material should be loaded or unloaded
 - Instruct workers on how to switch, make up, and break up trains in a safe manner
 - Supervise a passenger train crew
 - Read train orders, timetable schedules, and other instructions and discuss them with the engineer
 - Check watch settings with that of the engineer
 - Signal the engineer to begin the train run, using a radio-phone or hand signals
 - Collect tickets, fares, and passes from passengers
 - Answer passengers' questions about train rules and schedules
 - Announce the names of train stations
 - Direct workers to inspect car brakes, air hoses, and couplings
 - Help passengers disembark the train
 - Prepare reports to explain accidents and delays
 - Supervise a freight train crew
 - Inspect couplings and airhoses to make sure they are safely fastened
 - Give and receive instructions about stops, delays, or oncoming trains
 - Keep records of the cars switched
 - Supervise workers who repair locomotives
 - Direct the movement of freight cars

HOURS OF WORK/TRAVEL

- Many of these jobs involve shift work. Undesirable shifts are usually assigned to workers who have the least seniority.
- Some of these jobs require long distance train travel. For example, TRAIN CONDUCTORS often spend several nights a week away from home.
- CONDUCTORS often work during nights.

SAMPLE PLACES OF WORK

- Passenger and freight train companies
- Factories, plants, and other places that operate their own rail systems

812 SUPERVISORS: MATERIAL MOVING EQUIPMENT OPERATORS

These people supervise workers who operate equipment used to move materials at construction sites, ship yards, railroad yards, oil fields, and other places. They plan work procedures, prepare work schedules, and see that work is done correctly and on time. They assign duties to workers and evaluate their work. They handle complaints, prepare reports, and may keep work records. They may help workers perform difficult tasks or relieve them during emergencies. They may also hire, train, and fire workers.

SAMPLE WORK ACTIVITIES

- Supervise workers who:
 - . Dig and grade earth for projects, such as highways, streets, drainage ditches, and dams
 - . Operate vehicles and machines to dump, scrape, and spread dirt
 - . Load and unload ship cargoes
 - . Operate and maintain gas compressors, engines, and pipelines used to transport gas
 - . Sample, gauge, and test oil
 - . Load and unload railroad cars at a grain elevator
 - . Separate sand and gravel and load them into railroad cars and trucks
 - . Unload tobacco at an auction warehouse
 - . Receive, store, and ship reactor fuel elements
 - . Clean and service oil and gas wells
- Read production schedules to determine daily work activities
- Determine what materials require special handling and how they should be handled
- Instruct workers on the order and manner in which to perform tasks
- Assign new workers to experienced workers for training
- Measure distances to locate boundaries
- Determine why equipment is not working properly
- Help resolve operating problems
- Keep records of materials loaded or unloaded
- Operate equipment during emergencies
- Collect records and send them to the office
- Schedule the maintenance and repair of equipment

HOURS OF WORK/TRAVEL

- Some of these jobs may require travel to construction or other project sites.

SAMPLE PLACES OF WORK

- Companies that specialize in loading and unloading ships' cargo
- Construction companies that specialize in building streets, roads, dams, and other large projects
- Grain and feed mill companies
- Mining and quarrying companies

- Nuclear plants
- Oil companies
- Warehouse and storage companies

B2 TRANSPORTATION OCCUPATIONS

These workers operate equipment to transport goods, resources, and passengers. They may operate trains, ships, trucks, or autos. They move people and products long distances or from one work area to another at the same site. They may operate cranes or bulldozers, or fly airplanes. Workers may operate equipment to control trains, maintain ship engines, or move ships through locks and bridges. Some workers inspect transportation equipment.

B21 MOTOR VEHICLE OPERATORS

Workers in these occupations drive cars and trucks that transport goods or people. They may drive tractor-trailer trucks between cities or across the country to deliver goods. They may drive heavy trucks that haul construction materials or smaller delivery trucks. Some operate school and public buses to transport people while others drive taxis or limousines for individuals. They must keep records and report maintenance problems. Some workers do minor repairs.

B212 TRUCK DRIVERS, TRACTOR-TRAILER

These people drive tractor-trailer trucks to carry goods between terminals. Some deliver a load to a nearby city, pick up another loaded trailer, and return it to their home base on the same day. Others make runs that take days to complete. On very long trips, they may work with a partner and sleep when the partner drives. Some drivers have regular runs. Others have schedules that change from trip to trip. Besides driving, they check their trucks and loads for safety, write trip reports, and may load or unload goods.

SAMPLE WORK ACTIVITIES

- Drive a tractor-trailer truck to deliver products or livestock
- Inspect trucks for defects before and after trips
- Write reports about the condition of trucks
- Keep a driving log
- Help workers load and unload materials
- Deliver utility poles to a construction company
- Drive a tractor-trailer truck to spray water
- Haul logs from a forest to a mill
- Drive a truck into a loading position
- Use a crane hook to help unload logs
- Load furniture into a van
- Park trucks or trailers
- Connect loaded semitrailers to tractors

HOURS OF WORK/TRAVEL

- The number of hours these drivers can work is limited by law. They cannot be on duty more than 60 hours in any 7 day period and cannot drive more than 10 hours without being off duty at least 8 hours. Many drivers work the maximum hours permitted.
- Many TRACTOR-TRAILER-TRUCK DRIVERS travel long distances and spend nights away from home.

SAMPLE PLACES OF WORK

- Trucking companies
- Furniture manufacturers
- Independent trucking operations
- Companies that use large trucks to deliver goods
- Lossing companies

8213 TRUCK DRIVERS, HEAVY

These people drive single-body trucks that carry materials that weigh 3 tons or more. This type of truck includes dump, tow, flat bed, redi-mix, and tank trucks. Some of these trucks are mounted with special equipment. Drivers in these jobs may deliver loads to construction sites, warehouses, stores, or homes. They may load and unload goods or materials. They may collect receipts or payments for loads delivered and keep records of deliveries made. They may make minor repairs to trucks and report other repairs needed.

SAMPLE WORK ACTIVITIES

- Drive a truck equipped with a concrete mixer to deliver concrete mix to job sites
- Move hand and foot controls to jerk a truck forward and backward to loosen and dump material
- Clean a truck after a delivery has been made
- Drive a special type of truck to transport gunpowder from freight cars to storage houses
- Drive a tank truck to deliver gasoline or oil to customers
- Record the amount of oil delivered to customers
- Drive a tank truck to transport bulk milk between farms and dairies
- Watch the level gauge of a storage tank to figure out how much milk the tank contains
- Drive a truck equipped with a lifting device to collect garbage or trash and take it to a dump
- Position blocks and tie ropes around items to secure cargo
- Drive a tank truck to sprinkle water on streets to dampen dust
- Deliver trucks, tractors, or fire engines to purchasers
- Tow cars that are stalled or damaged by an accident
- Drive a tank truck equipped with a suction pump to drain gas pipelines

HOURS OF WORK/TRAVEL

- These truckers often work 48 hours or more a week.
- Sometimes workers in these jobs work during early morning or evening hours.

SAMPLE PLACES OF WORK

- Businesses that sell or use redi-mixed concrete
- Gas stations and garages that tow in wrecked cars and trucks
- Large dairies
- Cities and towns that provide garbage pick-up service
- Businesses that supply gasoline and oil to service stations
- Construction companies
- Any business or industry that delivers large loads of materials or equipment to its customers by truck

8214 TRUCK DRIVERS, LIGHT (INCLUDING DELIVERY AND ROUTE DRIVERS)

People in these jobs drive trucks that carry less than 3 tons weight. These types of trucks include pick-up, delivery, and van trucks. Most of these workers drive trucks to deliver goods, materials, or machinery within a local area. They may deliver items to stores, homes, farms, plants, or construction sites. They may load and unload goods or materials. They often collect receipts or payments for items delivered and keep delivery records. They may do routine servicing of their trucks.

SAMPLE WORK ACTIVITIES

- Drive a truck to deliver prepared meals to airports
- Give billing forms to workers and collect receipts
- Drive a truck to deliver liquid fertilizer to fields
- Connect hoses and open valves to spread fertilizer on soil
- Keep records of the amount of fertilizer used on fields
- Drive a truck to deliver phone directories
- Check truck loads to be sure they agree with shipping papers
- Write receipts for loads picked up
- Talk with a supervisor by radio
- Inspect truck tires, lights, brakes, gas, and oil
- Make emergency repairs to a truck, such as changing tires or installing fuses and spark plugs
- Drive a truck loaded with explosive material
- Drive a truck to escort trucks hauling mobile homes
- Unload explosives from a truck

HOURS OF WORK/TRAVEL

- Many of these drivers work some overtime.
- Drivers who deliver foodstuffs may work during early morning or late evening hours.

SAMPLE PLACES OF WORK

- Hotels, restaurants, and other businesses that prepare and deliver foods or food products
- Delivery companies
- Telephone companies
- Any company or business that delivers products or materials in loads weighing less than 3 tons

8215 BUS DRIVERS

BUS DRIVERS take passengers from place to place in a city or town or from city to city. They may drive a public bus to pick up and discharge passengers at bus stops along city streets. They may take children to schools in the morning and return them to their homes at the end of each school day. They may transport workers to and from work sites or drive a chartered bus to take groups to and from different locations. They may drive an intercity bus and pick up and discharge passengers in many cities along a route.

SAMPLE WORK ACTIVITIES

- Drive a bus to take farm workers to work sites
- Drive a bus from city to city
- Drive a bus along an assigned route in a city
- Park a bus in a loading area
- Give information to bus passengers and help them with their baggage
- Collect tickets and money from passengers
- Adjust heat and air controls to keep passengers comfortable
- Keep records of money collected and mileage driven
- Report accidents or delays
- Check gas, oil, and water

- Keep close check on time to meet schedules

HOURS OF WORK/TRAVEL

BUSDRIVERS who travel from city to city may work nights and weekends and have to spend nights away from home.

- Government regulations specify that intercity drivers shall not drive more than 10 hours without having at least 8 hours off and shall not drive at all after being on duty for 15 hours. BUS DRIVER who drive public busses within a city may work on Saturdays and during early morning and early evening hours.

SAMPLE PLACES OF WORK

- City bus companies
- Intercity bus companies
- Schools
- Airports or hotels
- Large farms

8216 TAXICAB DRIVERS AND CHAUFFEURS

People in these jobs drive cars, taxicabs, limousines, or hearses. They may work for themselves or for a company, factory, or private employer. They may drive passengers in a city cab, for example, or cars rented to customers. They may transport office workers and visitors for a business or industry. Some drive newly-assembled cars to shipping areas. Others drive private cars for their owners, or hearses or limousines for funeral parlors. They may make minor repairs to vehicles and keep records.

SAMPLE WORK ACTIVITIES

- Drive a private car as ordered by its owner
- Help passengers get into and out of a car
- Make minor repairs to a car
- Drive a hearse to take bodies to a funeral parlor
- Help other workers move a casket into a hearse
- Drive a taxicab to transport passengers for a fee
- Use a car radio to send and receive messages
- Collect fees recorded on a taxi meter
- Drive a custom-built sedan to pick up and discharge airport passengers
- Drive visitors of a business to places they want to see
- Service rental cars and deliver them to customers
- Drive customers' cars to and from service areas of a repair shop

HOURS OF WORK/TRAVEL

- CHAUFFEURS may make overnight drives and long trips that require irregular hours.
- Many workers in these jobs drive during evening hours.

SAMPLE PLACES OF WORK

- Car rental companies
- Taxicab companies
- Factories where automobiles are built
- Airports and railroad stations
- Private car owners
- Businesses and industries

B218 DRIVER -SALES WORKERS

These workers drive over assigned routes to deliver and sell goods or collect and deliver items. Their work duties depend upon the particular jobs they have. For example, some deliver newspapers or milk to homes or baked goods or other products to grocery stores. Others pick up and deliver laundry, or service and refill vending machines. Besides making deliveries, these workers also handle customer complaints and requests for service. They also may prepare billing slips and collect payments.

SAMPLE WORK ACTIVITIES

- Drive a truck to deliver beer, milk, or bakery products to grocery stores
- Deliver milk to customers' homes
- Pick up and deliver laundry at businesses
- Collect money from customers and make change
- Keep records of sales and deliveries
- Call on customers to get new business
- Place stock on shelves
- Pick up unsold products
- Direct workers to load and unload a truck
- Deliver newspapers to homes, businesses, or airline or bus stations
- Keep records of business expenses
- Sell sandwiches and drinks from a lunch truck
- Collect money from juke boxes and pinball machines
- Refill coin-operated machines that dispense cigarettes, coffee, or food
- Make minor repairs to coin-operated machines
- Unload a truck and carry goods into a home or business

HOURS OF WORK/TRAVEL

- Many DRIVER-SALES WORKERS start to work very early in the morning.

SAMPLE PLACES OF WORK

- Dairies
- Bakeries
- Firms that distribute food and beverages
- Newspaper companies
- Laundry and dry cleaning businesses
- Vending machine companies
- Any business that makes routine deliveries to businesses or homes

B219 OTHER MOTOR TRANSPORTATION OCCUPATIONS, N.E.C.

People in these jobs operate and control on-land vehicles to pick up and move materials or equipment. For example, some drive a sweeping machine that cleans streets of trash and dirt. Others deliver motorcycles. These workers start, stop, and control the movement of the vehicle. They pull levers, turn wheels, push buttons, and press pedals to operate the vehicle and its attachments.

SAMPLE WORK ACTIVITIES

- Drive a sweeping machine that cleans streets of trash and other debris
- Fill the water tank of the machine with water from a hydrant
- Drive the sweeper along the street near the curb
- Move controls to start rotary brushes and a water spray, so that the machine picks up dust and trash from the street and drops it in a dirt trap at the end of the machine
- Pull a lever to dump refuse in piles at the curb for removal
- Drive a similar machine to clean parking lots at an industrial plant or shopping center
- Drive a machine that sucks leaves into a vacuum chamber

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- City governments
- Shopping centers
- Parking lots
- Factories
- Construction companies
- Private road owners

823 RAIL TRANSPORTATION OCCUPATIONS

These workers may operate and control railed vehicles such as locomotives, subway and elevated trains, streetcars, and industrial engines. Some operate and maintain equipment to regulate train operations and systems. They may inspect trains, safety brakes, and couplings, while others route train traffic, set traffic signals, or set out warning signals in emergencies. They may collect passenger tickets, help passengers board trains, and stow luggage.

8232 LOCOMOTIVE OPERATING OCCUPATIONS

People in these jobs control railed vehicles that carry people or materials. These vehicles include railroad locomotives, subway and elevated trains, streetcars, and industrial and mining rail engines. They follow train orders, train signals, and railroad rules and regulations. They inspect the vehicle before runs to make sure that necessary safety and other supplies are on hand. They move controls, such as a throttle and airbrakes, to drive the vehicles. They watch oil, temperature, and pressure gauges to make sure the engine is running properly. They watch for and give signals, and may prepare reports to explain accidents and delays.

SAMPLE WORK ACTIVITIES

- Keep a watch on locomotive instruments and watch for obstacles on the right-of-way and train signals during train runs
- Take inventories of supplies, such as fuel, water, and sand, to insure safe operations during runs
- Inspect the locomotive to detect damaged or work parts
- Watch oil, temperature, and pressure gauges to make sure the engine is running safely and properly
- Watch the train as it goes around curves to detect dragging equipment and smoking journal boxes
- Signal a worker to set the handbrakes on cars
- Start the diesel engine to warm it before a run
- Drive a locomotive to transport passengers or freight
- Interpret train orders, train signals, and railroad rules and regulations
- Inspect the locomotive before runs to make sure necessary supplies are on hand
- Set a watch so that it agrees in time with that of the conductor
- Move controls, such as a throttle and airbrakes, to drive the locomotive
- Prepare reports to explain accidents, unscheduled stops, or delays
- Drive a switching locomotive at a railroad yard, plant, quarry, or construction site to switch railroad cars for loading and unloading
- Drive a locomotive to stations in a railroad roundhouse to be cleaned, serviced, or repaired
- Drive an elevated or subway train in a city area
- Drive an electric-powered streetcar to transport passengers
- Collect fares from passengers and issue change and transfers
- Answer questions from passengers about fares, schedules, and routes
- Open and close doors and start and stop the streetcar to allow passengers to enter and leave

the vehicle

- Control a diesel engine to transport and shunt cars at a plant or mine
- Control an engine by moving power controls and brake levers
- Position rail cars for loading and unloading, following signals from another worker
- Operate a trackmobile to move railcars or trailers to weighing and loading stations
- Operate controls to drive a trackmobile onto the track and line up its wheels with the rails

HOURS OF WORK/TRAVEL

- Workers who operate railroad freight trains are often assigned runs on short notice and at odd hours.
- Workers who deliver cargo or passengers to a distant station one day may not return until the next day. They may spend several days a week away from home.
- Railroad trains, subway trains, and streetcars operate 24 hours a day, 7 days a week. Operators of these vehicles may have to work nights, weekends, and holidays. Desirable shifts are generally assigned to those who have the most seniority.

SAMPLE PLACES OF WORK

- Railroad companies
- Mining and logging companies
- Industrial plants that have their own rail system
- Subway and elevated train companies
- Streetcar companies

8233 RAILROAD BRAKE, SIGNAL, AND SWITCH OPERATORS

These workers operate railroad track switches and couple cars to make up trains. They also inspect couplings, air hoses, handbrakes, and other train equipment to make sure they work properly. They may set out warning signals during emergencies, reroute train cars, and signal workers to set handbrakes. They may climb to the top of trains to inspect equipment or set car brakes. They may make minor repairs to equipment. Some collect tickets from passengers, help them board trains, and stow their baggage.

SAMPLE WORK ACTIVITIES

- Inspect train equipment, such as airhoses, and handbrakes, to make sure they work properly
- Help passengers board and leave a train
- Collect tickets, fares, and passes from passengers
- Answer questions about train rules and schedules
- Control the air conditioning, heating, and lighting on a train
- Set warning signals in front of and behind the train during emergencies
- Make minor repairs to train couplings, air hoses, and journal boxes
- Signal the engineer to start or stop a train while cars are uncoupled
- Ride in the caboose of a train to watch for signals from other crew members
- Relay signals to the yard engineer in a railroad yard, industrial plant, or quarry
- Read switching orders and check them with the yard engineer
- Uncouple and couple railroad cars

HOURS OF WORK/TRAVEL

- Since trains operate 24 hours a day, 7 days a week, workers must often work nights, weekends, and holidays. Generally undesirable shifts are assigned to those with the least seniority.

SAMPLE PLACES OF WORK

- Railroad companies
- Private industries that have railroad facilities, including:

- . Grain storage companies
- . Lumbering companies
- . Mining companies

8239 RAIL VEHICLE OPERATORS, N.E.C.

These workers operate equipment used to route train traffic, control track switches, or carry rail vehicles to servicing stations. Some operate switching equipment in a control tower to route train traffic at a switching point. They watch as trains approach and move switches to set traffic signals and route trains to different tracks. Some drive a special vehicle to take streetcars to and from servicing and storage areas. Some drive a transfer table equipped with a power winch to raise and move railroad cars and locomotives.

SAMPLE WORK ACTIVITIES

- Operate switching equipment in a control tower to route train traffic in a railroad yard or switching point
 - . Follow switching orders, train schedules, and safety rules
 - . Watch approaching trains and move switches to set traffic signals and start track switches
 - . Receive and send switching orders by phone or telegraph
- Control a car-retarder system to regulate the speed of freight cars
 - . Watch lights on a panelboard to see whether track switches are open or closed
 - . Notify the yard engineer where to shunt cars
 - . Press a button to start a braking device to reduce the speed of moving railcars
- Drive streetcars to a car barn for servicing or storage
 - . Compare the mileage readings on streetcars with maintenance charts to see whether cars need servicing
 - . Read daily schedules to determine the number of cars required for the next day's run
 - . Drive streetcars to their proper tracks
 - . Record the number of cars sent to the repair station, the servicing needed, and the number of units ready for use
- Drive a transfer table equipped with a power winch to move rolling stock at a railroad yard
 - . Drive the table to the areas where railcars or locomotive are located
 - . Pull the locomotive onto the transfer table, using a winch
 - . Revolve the table to align its track with track upon which a locomotive is resting
 - . Drive the table with the rolling stock to specified areas

HOURS OF WORK/TRAVEL

- People who work at railroad yards may be required to work on shifts.

SAMPLE PLACES OF WORK

- Railroad companies
- Streetcar companies
- Mining and other companies that operate their own rail system
- Companies that build and repair railroad locomotives and cars

824 WATER TRANSPORTATION OCCUPATIONS

These workers operate ships, boats, and barges. They may navigate and steer ships, direct crew, and keep daily records of ship activities. They may operate or tend equipment or engines, do such manual tasks as scrub decks and paint, or rig and stow gear. They may direct engine crew and oversee engine maintenance. They may be responsible for passengers, cargo, or fishing vessels, tugs, barges, and small submarines used for research or recovery of sunken objects.

8241 SHIP CAPTAINS AND MATES

These workers command ships used to carry passengers, transport cargo, or catch fish. They navigate a ship and direct and supervise its crew. They use navigation tables and instruments to plot the ship's course. They operate radio units, depth finders, and other electronic equipment. They keep daily records of all activities aboard the ship. They inspect rigging, gear, and life-saving equipment and order needed repairs. They steer the ship, signal other vessels, and enforce safety and other rules. They may direct fishing, loading, or other activities.

SAMPLE WORK ACTIVITIES

- Command a fishing vessel
 - . Hire crew members
 - . Assign crew to watches and quarters
 - . Plot courses on navigational charts
 - . Record daily activities in a ship's log
 - . Signal passing ships, using a whistle, flashing lights, and a radio
 - . Examine fishing gear and life-saving equipment
 - . Order crew to repair or replace defective gear and equipment
 - . Stand watch for specified periods
 - . Direct workers who capture, preserve, stow, and refrigerate fish
- Command a ship used to carry passengers, freight, or other cargo across oceans, bays, lakes, and coastal waters
 - . Inspect the ship's holds during loading to make sure that cargo is properly stowed
 - . Examine cargo-handling gear and order the crew to repair or replace defective gear
 - . Supervise crew who clean and maintain the vessel
 - . Steer ships into and out of harbors and sounds
 - . Direct the course and speed of a ship, based on knowledge of local winds, weather, tides, and currents
- Command a riverboat to carry passengers, freight, or other cargo along rivers

HOURS OF WORK/TRAVEL

- SHIPS CAPTAINS and MATES may spend extended periods of time away from home.

SAMPLE PLACES OF WORK

- Fishing firms
- Passenger ship lines
- Ship companies that specialize in transporting cargo
- Ferryboat companies
- Riverboat companies

B242 BOAT AND BARGE OPERATORS

These people command and pilot barges, tugboats, motorboats, and dredges to transport people and materials, tow other vessels, or dredge waterways. A few command small submarines used to conduct ocean research or recover sunken objects. They use navigation instruments and knowledge of winds, weather, and tides to plot and steer a course. They supervise crew activities, inspect the boat and its equipment, and keep records of activities aboard the boat.

SAMPLE WORK ACTIVITIES

- Command a tugboat used to tow barges and ships into and out of harbors and sounds
- Use navigation aids, such as radar, sonic depth finders, and a compass
- Inspect towing gear and lifesaving equipment
- Order the crew to repair or replace defective equipment
- Direct crew who rig towlines to barges or ships
- Supervise crew who clean and paint the boat
- Stand watch for specified periods
- Supervise crew aboard a dredge (vessel equipped with machinery to dig under water)
 - . Supervise crew in dredging operations
 - . Keep a ship's log
- Command a barge used to transport passengers and cargo on inland waterways
 - . Direct workers in loading and unloading the barge and putting up rigging
 - . Inspect the barge to make sure it is seaworthy
 - . Direct the movement of the barge
 - . Prepare progress and personnel reports
- Command and pilot a small submarine used to conduct ocean research
- Operate a motorboat to carry passengers and freight
- Work as a deckhand aboard a vessel to clean and maintain the vessel and its equipment

HOURS OF WORK/TRAVEL

- Some of these jobs involve distant travel and considerable time spent away from home. Others require only light travel and little or no time away from home.

SAMPLE PLACES OF WORK

- Commercial shipping companies
- Companies that specialize in underwater construction
- Federal and State governments
- Ferryboat companies
- Military services

B243 SAILORS AND DECK HANDS

People in these jobs operate and tend equipment and do much of the manual labor aboard ships. They work under the direction of a ship's officers. Their duties may range from scrubbing decks, painting, and cleaning to steering the ship and repairing gear. They may rig, repair, and stow cargo-handling and other gear. They must be able to tie common knots and handle mooring lines when a ship is docking or departing. They take part in fire drills and may stand watch to look out for other ships.

SAMPLE WORK ACTIVITIES

- Study methods to handle and stow cargo
- Inspect lifesaving equipment to see if it is safe

- Stand watch for specified periods
- Steer a ship along a certain course
- Check compasses to see if a ship is on a proper course
- Use blinker lights to signal other ships
- Direct crew members to clean decks
- Use a leadline to measure the depth of water
- Break out, rig, and overhaul cargo-handling gear
- Overhaul lifeboats and lifeboat gear
- Use a winch to lower and raise lifeboats
- Chip rust from a ship's decks
- Connect hoses to pump oil into barges and tankers
- Dust and wax furniture
- Stow supplies and equipment
- Sweep and wash decks
- Paint decks, oil machinery, and repair cables

HOURS OF WORK/TRAVEL

- SAILORS AND DECKHANDS sometimes have to work during nights, weekends, and holidays. Some travel long distances and live aboard ships for long periods of time.

SAMPLE PLACES OF WORK

- Shipping companies and the Merchant Marine aboard:
 - . dredges
 - . ferry boats
 - . yachts
 - . freighters
 - . tankers
 - . freighter-passenger vessels
- U.S. Navy and Coast Guard

8244 MARINE ENGINEERS

MARINE ENGINEERS direct the work of crews that operate and maintain engines, boilers, deck machines, and other equipment on ships. They start and stop engines and regulate the speed of a ship. They see to it that proper water levels are maintained in boilers and condensers and that oil and grease cups are kept full. They read temperature and pressure gauges and record readings in a log. They also repair machinery. They use handtools and power tools to do their work.

SAMPLE WORK ACTIVITIES

- Inspect engines and other machinery on a ship
- Direct a crew of workers to fix engines and equipment
- Check water levels in boilers and other equipment
- Check oil and grease cups to be sure they are kept full
- Keep records of work activities, equipment performance, and fuel
- Remove and replace defective parts of engines and equipment
- Oil and grease gears, shafts, and bearings
- Check the pressure and flow of oil
- Read pressure and temperature gauges
- Stand watch to see that engines are working properly
- Start, stop, and regulate engines

HOURS OF WORK/TRAVEL

- Some MARINE ENGINEERS work on board ships that may be at sea for many weeks. They sometimes work during nights and weekends.

SAMPLE PLACES OF WORK

- Aboard freights, tankers, or passenger ships for:
 - the Coast Guard
 - the Navy
 - the Merchant Marine
 - shipping firms

8245 BRIDGE, LOCK, AND LIGHTHOUSE TENDERS

These people control canal locks, dams, and bridges to permit the passage of vessels along waterways. Some control railroad or highway drawbridges over waterways, watch for approaching vessels and lower gates, halt street traffic, and raise the drawbridge. Others control machinery to open and close locks and dams on a canal, adjust bridges at a wharf, or move railroad cars into or out of a lock. A few direct ships from a lighthouse. These workers also may direct workers, keep records, and repair equipment.

SAMPLE WORK ACTIVITIES

- Watch for approaching vessels and listen for whistles that signal they want to pass
- Move levers that start traffic signals and alarms and lower gates
- Start drawbridge motors
- Move levers to raise a drawbridge so that vessels can pass
- Signal vessels to pass through
- Clean, oil, and grease machinery
- Write orders for repair service
- Prepare reports of accidents
- Record the names of vessels passing and the number of trains or vehicles that cross a bridge
- Operate a power winch to move railroad cars into or out of a lock
- Assign tasks to workers at a canal lock
- Repair lock machinery motors and powerlines
- Control machinery to open and close locks and dams on a canal
- Record information, such as water levels, weather conditions, and the number of vessels that have passed
- Control an adjustable bridge at a wharf to allow railroad cars to be driven onto a scow

HOURS OF WORK/TRAVEL

- Many of these jobs may require some night, weekend, and holiday work.

SAMPLE WORK PLACES

- Railroad companies
- Construction companies that build tunnels or sewers
- Water transportation companies
- Federal agencies, such as the Inland Waterways Management Agency
- State agencies that manage water transportation

825 AIRPLANE PILOTS AND NAVIGATORS

These people fly or direct the course of planes and other aircraft. Most PILOTS fly planes to transport passengers and cargo. Many others perform tasks such as crop dusting, inspecting powerlines, and taking pictures. PILOTS may fly new aircraft to test their performance and safety. They may teach courses and give flying lessons. NAVIGATORS work with pilots. They locate the position and direct the course of aircraft. PILOTS AND NAVIGATORS use many complex instruments.

SAMPLE WORK ACTIVITIES

- Teach a flight crew how to handle emergencies such as crash landings
- Use navigation aids, such as charts, maps, a sextant, and a slide rule, to locate a plane's position and direct its course
- Go with students on training flights to show them how to taxi, takeoff, spin, turn, and land in a plane
- Train experienced pilots in the use of new equipment
- Fly a plane or helicopter low over the ground to dust or spray crops
- Order changes in the fuel supply, load, or route of a plane
- Read gauges to check a plane's oil, fuel, and air pressure
- Talk with a control tower by radio to get instructions for landing
- Log information, such as time in flight, altitude flown, and fuel used
- Watch dials and move controls to hold a plane or helicopter at a certain flight level
- Go with pilots on flights to evaluate their skills
- Direct the course of a remotely-controlled target airplane
- Watch control panels and recording graphs to check the performance of a plane
- Pilot a private plane to transport company officials and their customers
- Conduct in-flight tests of aircraft equipment
- Put aircraft through stalls, dives, slides, rolls, turns, and speed runs to test them

HOURS OF WORK/TRAVEL

- By law, AIRLINE PILOTS AND NAVIGATORS cannot fly more than 85 hours a month. Most actually fly less than 70 hours a month, and usually work only 16 days a month. However, they may have other, nonflying duties.
- The majority of airline flights involve layovers away from home.
- Airlines operate flights at all hours of the day and night, so work schedules are often irregular. PILOTS and NAVIGATORS who have little seniority may be assigned night, early morning, or holiday flights.
- PILOTS employed outside the airlines often have irregular schedules: For example, they may fly 30 hours one month and 90 hours the next. They often have many nonflying duties and have much less free time than AIRLINE PILOTS.
- PILOTS who work as instructors often give lessons at night or on weekends.

SAMPLE PLACES OF WORK

- Airline companies
- Large businesses that use their own planes to fly company cargo and executives
- Air taxi companies
- Businesses that provide services such as crop dusting, pipeline inspection, and sightseeing tours
- Federal, state, and local government agencies
- Military services
- Flying schools

828 TRANSPORTATION INSPECTORS

These workers inspect or observe equipment, products, or procedures used to transport people or materials. They look for defects or conditions which might cause unsafe conditions. Some inspect railroad tracks and equipment. Some inspect refinery tank cars or oil-dispensing equipment. Some inspect new cars before they are shipped. These workers may use handtools, electronic testing devices, or other equipment. They may operate and/or repair equipment. They write reports that describe their findings.

SAMPLE WORK ACTIVITIES

- Operate a machine mounted on a special rail car to detect defects in railroad tracks

- . Use handtools to adjust electronic recording equipment, meters, and other devices of the machine
- . Fill a container with paint so that the machine will mark sections of defective rail
- . Start the machine and signal workers
- Inspect railroad roadbeds and equipment to detect damage, wear, or equipment needing repair
 - . Observe the condition of the roadbed from a railcar
 - . Stop the car and examine switches, fishplates, and rails
 - . Operate switches to see if they are in operating condition
 - . Inspect signals and track wiring
 - . Direct section crews to repair or replace defective equipment
 - . Prepare reports that indicate items in need of repair
- Inspect and repair refinery tank cars
 - . Examine wheels, bearings, brakes, and safety equipment for defects
 - . Examine valves, fluds, and tank seams
 - . Seal leaks with calk
- Inspect equipment at an oil refinery for defects
 - . Operate pumping equipment to detect leaks or other problems
 - . Pump petroleum from storage tanks into special cars to check the accuracy of recording meters
- Inspect new cars before they are loaded for shipment
 - . Examine cars for scratches, dents, and broken glass
 - . Drive cars to detect motor noises and other problems
- Watch workers load drug products or foods into railroad cars to make sure correct procedures are followed

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Railroad companies
- Petroleum refineries
- Automobile manufacturers
- Wholesale food firms
- Firms that make or repair locomotives and railroad cars
- Motor transportation companies
- Companies that provide automotive services

83 MATERIAL MOVING OCCUPATIONS, EXCEPT TRANSPORTATION

These workers move heavy material at a work area or site. They may move rocks, trees, and earth at a construction site or use cranes to position materials. They may excavate or dredge at mining sites. Others may move cargo in shipyards or use industrial trucks to move materials in an industrial plant. Some tend conveyor belts or pipelines that move equipment, logs, machines, boats, and people at a site.

831 MATERIAL MOVING EQUIPMENT OPERATORS

These workers operate equipment that moves materials at construction and mining sites, shipyards, and industrial and manufacturing plants. For example, operating engineers use cranes, bulldozers, and paving machines. Longshore equipment operators move cargo into ship holds and to docks. Crane and tower operators may position objects at construction sites while excavating machine operators use scoops and shovels in dredging or mining operations.

8312 OPERATING ENGINEERS

OPERATING ENGINEERS control machinery used to dig and grade earth, put up structures, and move materials. This machinery includes power cranes, bulldozers, trench diggers, paving machines, and many other types of construction equipment. Their work duties depend upon the machinery they operate. Heavy machines, such as large cranes, are usually difficult to operate. Light equipment, such as air compressors, are the easiest to operate and require less skill.

SAMPLE WORK ACTIVITIES

- Adjust hand wheels and push pedals to drive machines and control attachments such as blades, buckets, and scrapers
- Operate hoists and cranes to move machinery or materials
- Turn valves to control the air and water coming from compressors and pumps
- Operate a tractor or bulldozer to clear land for structures
- Use construction machinery to put up steel structures
- Use machinery to pour concrete or other paving materials
- Service and repair equipment
- Operate controls to open and close steeltoothed buckets attached to the end of a crane
- Pull a lever to raise or lower a blade attached to the front of a bulldozer

HOURS OF WORK/TRAVEL

- Some OPERATING ENGINEERS work on highways and dams being built in remote locations. They may spend long periods away from home.
- OPERATING ENGINEERS work outdoors. As a result, they usually work steadily during the warmer months, but may work less during colder months.

SAMPLE PLACES OF WORK

- Contracting companies that work on large-scale projects such as highways, dams, and airports
- Utility companies
- Manufacturing companies
- Businesses that do their own construction work
- State and local highway and public works departments
- Factories
- Mining companies

8313 LONGSHORE EQUIPMENT OPERATORS

These workers operate power winches, cranes, lift trucks, and other equipment to move cargo into or from a ship's hold and from place to place on a dock. They use cranes or winches to load and unload heavy cargo such as cars, crates, and steel beams. They control machines that release grain into hatches, and hook hose lines to tanks to load and unload liquid cargo. They drive lift trucks along the dock or aboard ship to move lumber, machinery, and crated products. They also may lash and shore cargo aboard ships.

SAMPLE WORK ACTIVITIES

- Operate a power winch to load cars onto a ship
- Attach a hook or magnet to the end of a crane used to load and unload steel beams
- Watch signals from other workers to load and unload cargo
- Move controls to start the flow of grain from the spouts of a grain trimmer
- Position the spout of a grain trimmer over a ship's hatches to fill them with grain
- Drive a lift truck along a dock to move lumber or crated products
- Position and fasten hose lines to a ship's cargo tanks to load chemicals
- Lash and shore cargo aboard ship to keep it from shifting during travel
- Signal other workers to move, raise, or lower cargo

HOURS OF WORK/TRAVEL

- These workers may be required to work during nights and weekends.

SAMPLE PLACES OF WORK

- Docks and Ports
- Shipping companies

8314 HOIST AND WINCH OPERATORS

These workers operate hoists or winches to lift and move loads. They work in a variety of settings and may move equipment, people, loads, boats, or materials. They move levers and press pedals to control the direction, speed, and braking of the equipment and to raise and lower loads. They may listen for signals or watch dials to determine how to position and move the equipment. They also inspect, oil, and grease their equipment and may connect powerlines.

SAMPLE WORK ACTIVITIES

- Operate hoists or winches to:
 - . Move rocket parts to test areas
 - . Position barges to be loaded with coal
 - . Transfer coke to railroad cars and trucks
 - . Pull boats, and barges from the water
 - . Move products, equipment, or materials to and from storage areas
 - . Raise and lower elevators, and mine cars at a mine or quarry
 - . Load coal or ore onto conveyors in an underground mine
 - . Pull logs from a cutting area
 - . Raise steel towers and tension lines
 - . Lower instruments and tools into oil or gas wells
- Move a hoist in response to arm, bell, or buzzer signals
- Adjust brakes and other hoist equipment
- Move levers to wind and unwind cable on a drum
- Move a throttle to regulate the speed of a hoist drum
- Set up timber foundations for a hoist
- Connect electrical powerlines
- Move a hoist from place to place, using a mine car

HOURS OF WORK/TRAVEL

- Some of these jobs involve work at mines, logging camps, oil fields, seaways, or construction sites. Travel may be required to reach project sites. Some workers may spend periods of time away from home while projects are completed. Others work locally.

SAMPLE PLACES OF WORK

- Rocket test sites
- Construction companies
- Water transportation companies
- Ship building firms
- Mining and quarrying companies
- Lumbering companies
- Foundries
- Ore dressing, smelting, and refining plants
- Farms
- Oil companies

8315 CRANE AND TOWER OPERATORS

These workers operate cranes, or tower and cable equipment to lift, move, and position objects. They move pedals and levers to control the speed and action of the crane. They inspect the crane and related equipment to make sure they are in good working condition. They also check loads to make sure they are not too heavy for the crane and that they are secure. They may operate a crane mounted on rails, crawler treads, or a bridge or boat. They may clean and make minor repairs to the equipment.

SAMPLE WORK ACTIVITIES

- Operate a bridge crane to lift, and move, loads, such as machinery, equipment, or bulk materials
 - . Move pedals and levers to control the speed and direction of the crane and hoist attachments
 - . Watch loads being hooked onto the crane and determine the safety of the load
 - . Clean and lubricate the crane
 - . Inspect the crane for defective parts
- Operate a hoist to move loaded dinky cars to the front of the train
 - . Hook the hoist line into lift hooks on the dinky car
 - . Move levers to start the hoist and lift the car
- Operate a crane that travels on railroad tracks to lift and move objects
 - . Push pedals and pull levers to move the crane and raise or lower cables attached to loads
 - . Compare the weight of loads with the lifting capacity of the crane
 - . Inspect cables and grappling devices for wear
 - . Switch the crane between rails by signaling other workers to throw switches
- Operate a tower crane to lift and move materials to the tops of buildings
 - . Climb a ladder inside the tower to reach the control pad
 - . Control the crane movement in response to hand or radio signals
- Operate a crane mounted on crawler treads to lift and move objects
 - . Start the engine and drive the crane to the worksite
 - . Steer the crane by moving levers and pressing pedals that control the crawler treads
- Operate a powered crane mounted on a specially built truck
- Operate a derrick mounted on a boat or barge to lift and move heavy objects
- Operate a mobile crane to sort and stack logs

HOURS OF WORK/TRAVEL

- CRANE OPERATORS who work in the production industries may work night shifts or on weekends. Those who work in motor vehicle plants generally have a 40-hour work week, but may have to work overtime during periods of high demand for cars. They may also have short workweeks and layoffs during periods of low demand. Operators in the trucking industries may have to work during evenings, nights, and weekends.

SAMPLE PLACES OF WORK

- Construction companies
- Logging companies
- Mining companies
- Manufacturing plants
- Water transportation companies/shipping companies
- Automobile manufacturers

8316 EXCAVATING AND LOADING MACHINE OPERATORS

These workers operate machines equipped with scoops, shovels, buckets, or other devices to dig out, dredge, and load ore and other loose materials. They work at construction sites, mining camps, and similar places. They start and stop the machines, and move levers and pedals to control the equipment. They may drive the machine to the worksite. They oil and grease the machinery and may perform simple repairs. Some read blueprints to determine where to dig.

SAMPLE WORK ACTIVITIES

- Operate a power-driven dredge to dig channels in waterways
 - . Direct workers who lay pipe from the dredge to the shore and pump water
 - . Start and stop engines to operate equipment
 - . Move levers to position the dredge
 - . Start a power winch that draws in or lets out cable to change the position of the dredge
- Operate a power-driven crane equipped with a derrick bucket to dig out or move sand, gravel, or coal
 - . Drive the machine to the worksite
 - . Move hand levers and press pedals to rotate the crane and drag the bucket to move materials
- Operate a powered shovel to hoist earth and rock onto trucks
- Operate a machine equipped with a moveable shovel to dig out or move coal, dirt or other materials
- Heat heavy duty lubricant and spray it onto gears and other moving parts while the shovel is in operation
- Operate a machine to dig trenches needed for septic tanks
- Read blueprints to determine the location of the septic tank and drainpipes
- Drive and control a tractor to harvest salt

HOURS OF WORK/TRAVEL

- These workers generally work outdoors. They usually work steadily during the warmer months and have slow periods during colder months. Time also may be lost due to rain or snow.

SAMPLE PLACES OF WORK

- Business firms that do their own construction work
- Construction contractors

- Construction firms
- Mining and quarrying companies
- Salt mining companies
- State and Local highway and public works departments

8317 GRADER, DOZER, SCRAPER OPERATORS

These workers operate machines used to remove, spread, level, and grade earth. They may operate tractor-drawn, self-propelled, or mounted machines. They connect blades or other attachments to the machines and move levers to control the height and angle of the machine blade. They may push trees and rocks from land areas or haul and move dirt at building sites. They may scoop fallen rock from ditches beside a railroad track or spread and compact waste at a landfill site.

SAMPLE WORK ACTIVITIES

- Operate a tractor-drawn grader to plow and scrape up dirt and dump it in trucks or earth fills
- Operate a grader to spread and level dirt, gravel, and stone
- Operate a tractor equipped with a curved-in blade to push trees and rocks from land
- Fasten attachments to the tractor, using special hitches
- Drive a bulldozer over land to grade it
- Operate a railcar-mounted bucket to scoop fallen rock from ditches beside a railroad track
- Operate a machine equipped with a cutterhead to cut trenches for concrete roads
- Operate a tractor-drawn scraper to haul or move dirt on roadbeds and water reservoirs
- Move switches, levers, and pedals to control the loading rate on the scraper
- Drive and control a machine that heats and scrapes road surfaces to smooth them
- Drive a heavy road roller to compact earth for highways or runways
- Operate equipment to spread and compact layers of waste at a landfill site

HOURS OF WORK/TRAVEL

These workers generally work outdoors. Therefore, they usually work steadily during the warmer months and have slow periods during colder months. Time may be lost because of rain or snow.

SAMPLE PLACES OF WORK

- Construction companies
- Manufacturing companies that do their own construction work
- Mining companies
- State and Local highway and public works departments
- Utility companies

8318 INDUSTRIAL TRUCK AND TRACTOR EQUIPMENT OPERATORS

These people move materials using industrial trucks or tractors equipped with lifts, platforms, trailer hitches or other attachments. Some drive electric cars that pull dump cars filled with materials. They operate these vehicles by starting the engine, shifting gears, pressing pedals, and turning the steering wheel. They may also adjust controls which move the attachments. They move materials from place to place in factories, plants, or storage yards. Many also do other tasks, such as loading, unloading, and weighing materials.

SAMPLE WORK ACTIVITIES

- Operate an electric car to dump coal into ovens
 - . Weigh the empty car on a scale
 - . Open chutes on a storage bin to dump coal into the car
 - . Drive the car to an oven and move controls to dump the coal into the oven
 - . Record the oven number, date, and mix of coal
- Drive an electric car to haul hot coke from an oven to work stations
 - . Position the car to receive hot coke from the oven
 - . Signal a worker to release the coke from the oven
- Operate a transfer car to move carloads of pipe to work and storage areas
 - . Push carloads of pipe onto the transfer car
 - . Move the pipe to the production area
- Operate a tractor vehicle equipped with a scoop to lift and move materials to feed conveyors, hoppers, or chutes
 - . Move levers to lower and tilt the bucket
 - . Oil, fuel, and clean the vehicle
- Drive a truck equipped with a forklift or scoop to move products or materials in a warehouse or storage yard
- Drive a tractor to move trailers of cotton to storage areas
- Drive a tractor equipped with cable winches to load, unload, or stack logs
- Drive a tractor to pull implements, tow trailers, or pull objects from the ground

HOURS OF WORK/TRAVEL

- Some of these jobs may require shift work.

SAMPLE PLACES OF WORK

- Coke mills
- Cotton gins
- Grain and feed mills
- Lumber companies
- Manufacturing plants
- Sawmills
- Tree farms
- Warehouses

8319 MATERIAL MOVING EQUIPMENT OPERATORS, MISCELLANEOUS

These workers operate or tend conveyors, pumps, pipelines, and other equipment used to move materials. They move items such as raw materials, tools, and equipment at plants, docks, mines, oil fields, or similar places. They turn knobs, wheels, valves, or other controls to adjust and control the equipment. They may weigh materials and load them into hoppers or onto conveyors. They may clear machine jams, make minor repairs to equipment, and keep work records.

SAMPLE WORK ACTIVITIES

- Operate or tend material moving equipment to:

- . Route rice to milling machines
 - . Convey cookies to cool them before packaging
 - . Convey boxes of fruit or other produce washing vats
 - . Transfer carloads of lumber between loading and storage areas
 - . Pump bulk cement into tank trucks and boats
 - . Pump and route oil products through pipelines
 - . Pull materials, vehicles, or implements
 - . Sort and distribute materials at a loading dock
 - . Load or unload vehicles, railcars, and ships
 - . Convey materials between processing stations in a factory or plant
 - . Dispose of radioactive equipment and wastes
- Read work orders
 - Weigh materials on a scale and record weights
 - Push levers to start pumps, air compressors, and other conveying equipment
 - Open hopper gates to deposit materials on a conveyor
 - Turn knobs to control conveyor speed
 - Turn valves to start fans
 - Watch pressure dials to check the operating condition of conveyors
 - Clear machine jams
 - Turn wheels and move levers to adjust machines
 - Inspect equipment for leaks
 - Oil, grease, and make minor repairs to machinery
 - Keep records of pressure, temperature, and flow rate readings
 - Drive a transfer car to move lumber to a kiln
 - Operate a winch to load materials onto a transfer car
 - Drive a team of animals to pull wagons, scrapers, or plows

HOURS OF WORK/TRAVEL

- Some of these jobs may involve shift work and/or work on weekends.

SAMPLE PLACES OF WORK

- Bakeries
- Chemical plants
- Companies that make cement or concrete
- Construction companies
- Food canning and preserving plants
- Grain and feed mills
- Iron and steel mills
- Manufacturing plants
- Mining and quarrying companies
- Oil refineries
- Paper and pulp plants
- Petroleum production companies
- Pipelines
- Sawmills
- Shops that make forgings
- Waterworks
- Woodworking shops

8499 HANDLERS, EQUIPMENT CLEANERS, HELPERS, AND LABORERS

These workers may carry tools and supplies, do routine tasks, clean equipment, and help other workers. They may help set up machinery, carry materials to and from work areas, sort and package goods, or move freight or stock for storage or shipping. Some help construction workers or do routine construction work. Some help service and repair cars and other vehicles, machinery, or electrical equipment. They may clean tools, equipment, and work areas.

85 SUPERVISORS: HANDLERS, EQUIPMENT CLEANERS, HELPERS, AND LABORERS

These people supervise workers who load and unload materials, clean equipment and work areas, or do other routine tasks at a worksite. They study work schedules and determine the workers and equipment needed to complete assignments. They assign duties to workers and check their work to see that company standards are met. They handle complaints and help solve difficult work problems. They also keep work records and may hire, train, and fire workers.

SAMPLE WORK ACTIVITIES

- Supervise workers who clean machinery and work areas in a food processing plant
 - . Direct workers in cleaning machines, such as cookers and washers
 - . Report equipment problems to the maintenance department
- Supervise workers who clean airplanes or ships
 - . Train new workers
 - . Watch work in progress and inspect completed work
 - . Take inventories of supplies
 - . Order cleaning supplies
 - . Keep records of inspections
- Supervise workers who clean ship tanks
 - . Decide the order in which work should be done and the equipment required
 - . Keep records of work completed
- Supervise workers who clean railroad cars
 - . Assign daily work schedules to workers
 - . Prepare reports that show the number and types of cars cleaned each day
- Supervise workers who load and unload railroad freight
 - . Determine the number of workers needed to unload railcars, based on shipping records
 - . Check freight loaded against shipping records
- Supervise workers who park cars in a parking lot or garage
 - . Prepare daily bank deposits and records of money collected
- Supervise workers who wash and polish cars at a carwash
 - . Quote prices to customers
 - . Take payments and make change
 - . Handle customer complaints
 - . Keep worker time and waste records

HOURS OF WORK/TRAVEL

- Some of these jobs may require evening, weekend, or shift work.

SAMPLE PLACES OF WORK

- Airline companies
- Bottling companies
- Breweries
- Car wash companies
- Dairies
- Food processing plants
- Parking lots and storage garages
- Railroad companies
- Ship and boat building companies
- Ship companies

B6 HELPERS

Helpers assist other workers in construction, manufacturing, or industrial occupations. They may move equipment and supplies to work sites, clean tools and work areas, and operate machines and equipment. They do many of the routine tasks of a job, such as holding equipment, sanding wood, or bolting fixtures. Workers may perform some or all of the workers they help. They may sort materials, inventory supplies, or maintain and repair equipment.

B61 HELPERS: MACHINE OPERATORS AND TENDERS

These workers help machine operators and tenders in plastic and metalworking industries, woodworking and printing shops, textile mills, or precision production industries. They move materials and tools to and from work areas, help set up and adjust machines. They may tend machines during operation. They may prepare workpieces or position them for processing. They may sort finished products, keep records of machine processes, and clean machinery after use.

B611 HELPERS: METALWORKING AND PLASTIC WORKING MACHINE OPERATORS AND TENDERS

These people assist workers who operate machines used to shape plastic or metal. They move materials and tools to and from the workplace, help set up machinery, and position workpieces. They may operate controls to pour molten metal into ladles or to lift and position heavy workpieces or machine attachments. They may read machine gauges and keep processing records. They also clean and grease the machine and may measure, weigh, or inspect finished workpieces.

SAMPLE WORK ACTIVITIES

- Assist a worker who mixes molten metals
 - . Attach electrical connections to equipment
 - . Push controls to pour hot metal into a ladle
 - . Use a hammer and bar to knock hard slag from the pouring spout of a ladle
- Assist a worker in operating a kiln and conveyors at an ore refinery
 - . Read and record tank levels and temperatures
 - . Collect and weigh ore samples
 - . Measure the oxygen content of gases, using a gas analyzer
 - . Keep an operating log
 - . Oil and grease valves

- Assist a worker in setting up copper-refining tanks
 - . Cut and trim copper sheets, using a knife, pinchers, and power shears
 - . Straighten sheet blanks, using a sledge hammer
 - . Lift sheets and hang them on bars in a tank
 - . Scrape and flush out tanks, using scraping tools and a water hose
- Assist a FORGER in shaping hot metal on a power hammer
 - . Pull workpieces from a furnace with tongs
 - . Position and turn workpieces on an anvil
 - . Use a broom to remove scale from metal during forging
- Assist workers in forging metal products
 - . Load bars or billets into a furnace, using a hoist
 - . Move workpieces to and from work stations, using tongs
 - . Trim excess material from finished parts, using a handsaw
 - . Remove materials from conveyors
- Assist workers who operate metal fabricating machines
 - . Lift and bolt dies on machines
 - . Fill tanks and oilcups with lubricants
 - . Help lift and position workpieces
 - . Grind or scrape rust or sharp edges from workpieces
 - . Hammer out bent spots in metal
 - . Sort, mark, or tag finished work
 - . Measure finished workpieces
- Help in riveting structures
 - . Lift structural parts into position for riveting, using a hoist
 - . Bolt parts together, using a wrench
 - . Push a riveting machine along a rail
 - . Catch hot rivets, using a bucket
 - . Position rivets in holes

HOURS OF WORK/TRAVEL

- These jobs may require shift work. Workers in iron and steel mills and other places that operate around the clock may sometimes work on weekends.

SAMPLE PLACES OF WORK

- Plants that produce:
 - . Abrasive and polishing products
 - . Clocks and watches
 - . Electrical equipment
 - . Metal alloys
 - . Plastic material
- Heat treatment plants
- Iron and steel mills
- Ore dressing, smelting, and refining plants

8614 HELPERS: METAL AND PLASTIC PROCESSING MACHINE OPERATORS AND TENDERS

These people assist workers who operate or tend machines used to work metal and plastic. They move materials and parts to and from the work area and load materials in the machines. They also clean the machines and remove workpieces and machine attachments after work is completed. They may cut, bend, twist, polish, or weld parts, using handtools and power tools. They also may heat metal and hammer it into shapes.

SAMPLE WORK ACTIVITIES

- Help another worker twist wire into cable
 - . Position spools of wire on a spindle, using a hoist
 - . Help install the spools in the machine
- Assist workers who weave wire cloth or screening
 - . Transport beams, wire stock, and machine parts to looms
 - . Thread wire into machines
 - . Remove spools and bobbins from machines and put them away
- Assist an ORNAMENTAL METAL WORKER
 - . Cut metal stock to size, using shears and saws
 - . Bend or twist metal into a specified shape, using handtools and power tools
 - . Weld, braze, or bolt parts together
 - . Clean the heating forge
 - . Build fires in the forge
 - . Heat metal and hammer it into shapes
 - . Grind and polish the surfaces of workpieces

HOURS OF WORK/TRAVEL

- These jobs may require shift work. Some jobs may require overtime work.

SAMPLE PLACES OF WORK

- Wirework shops
- Factories or plants that make metal products
- Ornamental iron shops

B615 HELPERS; WOODWORKING MACHINE OPERATORS AND TENDERS

These people assist workers who operate machines to cut or make things out of wood. They furnish them materials, tools, and supplies, and clean the work area and equipment. They load wood pieces on and off the machines and hold materials or tools for the workers. They also do other routine tasks, such as tending machines, preparing wood for processing, and replacing machine parts.

SAMPLE WORK ACTIVITIES

- Position logs on a lathe, using an electric hoist
- Measure logs to locate and mark their centers
- Check logs to detect rot, cracks, and splits
- Remove knots, dirt, and other matter from logs, using an axe, steam hose, and pick
- Load wood pieces on a conveyor belt that carries them to a clipping machine
- Position wood under the blade of the machine
- Stack veneer sheets on a cart and push the cart to the next processing station
- Lift tree trunks onto the table of a circular saw
- Hold logs steady while they are cut
- Throw cut pieces of wood into piles
- Split logs, using a powered log splitter
- Remove and replace machine parts
- Help assemble box sections, baskets, or barrels

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies that make wood products such as:

- | | |
|------------------------------------|---------------|
| . barrels | . poles |
| . baskets | . firewood |
| . boatseats | . plywood |
| . crossbars for power or telephone | . wood veneer |

B616 HELPERS: PRINTING MACHINE OPERATORS AND TENDERS

These people assist workers who operate printing machines. They furnish them with materials, tools, and supplies and clean the work area and equipment. They load materials into and off machines and do other routine tasks, such as checking materials for defects, counting or weighing materials, and replacing machine parts.

SAMPLE WORK ACTIVITIES

- Assist a worker in printing designs on plastic material
 - . Mount rolls of plastic on a machine spindle
 - . Thread material through press rolls
 - . Watch plastic while it is winding
 - . and mark or cut out defective portions
 - . Record the weight of rolls and the amount of plastic on them
 - . Wash ink rollers and pans in solvent
- Assist a worker who operates a screen-printing machine to print patterns on textiles
 - . Loosen and tighten bolts, using a wrench
 - . Remove, replace, and adjust machine parts
 - . Carry stacks of cloth and stack them on a shelf for use by workers who feed the machines
 - . Watch printing operations to detect blurs, or other printing defects
 - . Report printing errors to the machine operator
 - . Load and unload handtrucks and take the trucks to and from storage areas
- Assist a wallpaper printer
 - . Carry pails of color solutions to the printing machine
 - . Help change print rollers
 - . Wash print rollers and floor areas around the machine, using a water hose
- Assist workers in setting type and operating printing presses
 - . Keep presses supplied with paper stock
 - . Clean presses and printing plates
 - . Count, stack, and wrap printed material
 - . Trim printing plates, using metal shaving machines
 - . Help print letters and designs on articles

HOURS OF WORK/TRAVEL

HELPERS in the manufacturing industries may work on shifts.

- Those in the printing and publishing industry also may work during weekends and holidays.

SAMPLE PLACES OF WORK

- Plastic products manufacturers
- Printing and publishing companies
- Print shops
- Private companies, government agencies, and other organizations that do their own printing
- Textile plants
- Wallpaper manufacturers

8617 HELPERS: TEXTILE, APPAREL, AND FURNISHINGS MACHINE OPERATORS AND TENDERS

These people assist workers who operate and tend machines used to make, clean, or dye textile products and furnishings. They carry or truck materials, load and unload machines, and sort finished articles. They may also mix chemicals, dyes, or cleaning solutions and pour them into tanks or containers. They clean machine filters, conveyors, and work areas. They may also scrub, cut, or sew cloth articles and do other tasks to help the machine operators.

SAMPLE WORK ACTIVITIES

- Help in the manufacture of felt goods
 - . Cut felt from feed rolls
 - . Remove rolls of processed material from machines
 - . Lift rolls of material and place them into feed holders
 - . Pick up scraps of material from around machines
 - . Measure ingredients
- Assist workers who operate machines to make padding
 - . Help set up machines
 - . Carry or truck materials to machines
 - . Fill tanks with sizing
 - . Stamp information on finished pads
 - . Remove waste from a conveyor
 - . Place finished pads in boxes
- Help a DRY CLEANER dryclean clothing, drapes, and other articles
 - . Start drycleaning machines
 - . Add products and to machines to prepare them for work
 - . Load and unload washing machines and tumblers
 - . Move articles to and from machines, using a handtruck
 - . Scrub garments, using brushes and soap
 - . Clean machine filters
 - . Sort garments and distribute them to pressers
- Help a DYE-REEL OPERATOR bleach or dye cloth
 - . Mount cloth rolls on brackets
 - . Feed cloth through machine attachments
 - . Sew the ends of cloth together, using a portable sewing machine
 - . Turn valves to drain, rinse, and fill tanks
 - . Carry chemicals, such as dyes, bleaches, and cleansers
 - . Carry cloth between departments, using a handtruck

HOURS OF WORK/TRAVEL

- These jobs may require shift work and/or weekend work.

SAMPLE PLACES OF WORK

- Dry cleaning plants and laundries
- Plants that produce rubber, felt, or textile products
- Carpet and rug manufacturers
- Companies that produce knit goods

8418 HELPERS: MACHINE OPERATORS AND TENDERS, ASSORTED MATERIALS

These people assist workers who operate and tend machines used to make, process, or finish products and materials. They work in a variety of industries and may help one or a group of workers. They carry or truck materials and equipment to and from the work area. They load and unload materials onto and from the machines, and keep the machinery and work area clean. They may measure and mix materials, grease and oil machinery, and keep production or processing records. They may also adjust machine controls, or do other tasks to help with production.

SAMPLE WORK ACTIVITIES

- Help a worker who operates a machine to clean coils of metal wire
 - . Set spacing between machine rolls
 - . Adjust machine wipers, brushes, and feed guides,
 - . Place metal coils on a feed-out reel by hand
 - . Stack processed coils on skids
- Help a worker who operates a machine to refine ore
 - . Open valves and start pumps to fill containers
 - . Raise and lower equipment, using an electric hoist
 - . Break scale from empty tanks
 - . Grease and oil equipment
- Help a kiln operator
 - . Move controls to direct the flow of materials through equipment
 - . Clean coolers, using an air lance
 - . Watch the flow of material through kilns, and report problems
 - . Collect samples for lab tests
 - . Record the weights of products or materials
- Help a FEED MILLER prepare animal feed
 - . Dump sacks of ingredients into a machine hopper
 - . Stir ingredients in a hopper, using a paddle
- Help a BOLTER tend flour sifting and purifying machines in a grain or feed mill
 - . Open slides in chutes and start elevators to route flour between sifters and grinding machines
 - . Pound on chutes with a mallet to keep the flour flowing
- Help a FREEZER OPERATOR freeze and package ice cream
 - . Pour cans of fruit into a sieve to separate juice
 - . Place cans of chocolate coating in a hot water vat
 - . Measure ingredients, such as ice cream mix and flavoring
 - . Dump ingredients into tanks
 - . Adjust controls on forming and wrapping machines
 - . Feed carton blanks into a machine
- Help a machine operator shape, form, and glue cardboard cartons
 - . Remove completed cartons from a machine and stack them
 - . Check orders for completeness
- Help a MAKE-UP OPERATOR in a chemical plant
 - . Weigh dry chemicals and record the weights on process sheets
 - . Move materials to mixing areas, using a handtruck
 - . Clean tanks, process lines, hoppers, and other equipment

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hours vary. Many jobs typically require shift work. Some jobs may require weekend work as well.

SAMPLE PLACES OF WORK

- Ore dressing, smelting, and refining plants
- Mining and quarrying companies
- Grain and feed mills
- Dairies
- Factories and plants that produce:
 - . Abrasives
 - . Asbestos products
 - . Brick and tile
 - . Building board
 - . Candies
 - . Carbon and lampblack
 - . Chemicals
 - . Chocolate and cocoa
 - . Coke products
 - . Distilled liquors
 - . Glass
 - . Lime
 - . Nuts
 - . Oils and fats
 - . Paper and pulp
 - . Paper goods
 - . Plastic products
 - . Rubber goods
 - . Rubber tires
 - . Stonework
 - . Sugar
 - . Tobacco products
 - . Wallpaper

B619 HELPERS: PRECISION PRODUCTION OCCUPATIONS AND SETUP OPERATORS

These people assist SHOE REPAIRERS, MACHINE SETUP OPERATORS, BAKERS, SIGN PAINTERS, or other workers who do precision production work. They carry or truck tools and materials to and from the work area, hand out supplies, and clean the equipment and work area. They may use handtools to sand, paint, polish, cut, or join products or parts. They may weigh, measure, and mix ingredients and hold articles in place while they are worked on.

SAMPLE WORK ACTIVITIES

- Help a SHOE REPAIRER repair shoes
 - . Rip worn soles and heels from shoes, using handtools
 - . Tack new soles and heels in place
 - . Trim excess leather from shoe parts, using a knife
 - . Sand and finish sole edges
 - . Shine, stain, and dye shoes
- Tend a machine that rewinds metal coils processed by another worker
 - . Place coils of metal on a rewinding device
 - . Pull levers to start the rewinder
 - . Cut material to length, using hand shears
 - . Remove coils of metal from the machine, using a hoist
- Help workers who produce bakery products
 - . Hand out bakery supplies
 - . Weigh and measure ingredients, such as sugar, flour, yeast, and dough
 - . Help load and unload machines, racks, and ovens
 - . Feed lumps of dough between the rolls of a machine
 - . Clean equipment, using brushes, cleanser, and water
 - . Grease, line, or dust pans on which dough is placed
- Help a FITTER position, align, and fit together products
 - . Hold and position measuring tapes or rods to help layout parts
 - . Grind away rough edges on products or parts
 - . Bolt parts together
 - . Carry tools and equipment
 - . Sweep work areas
- Help maintain equipment in a station of a power company
 - . Carry handtools to and from work areas
 - . Inspect equipment for defects
 - . Use handtools to help repair equipment

- Help a **SIGN PAINTER** layout and paint letters and designs
 - . Clean display boards, using a scraper
 - . Trace patterns to outline designs
 - . Paint backgrounds for displays

HOURS OF WORK/TRAVEL

- These jobs may involve shift work and/or weekend work.

SAMPLE PLACES OF WORK

- Shoe repair shops
- Boilermaking shops
- Dental laboratories
- Bakeries
- Stonework shops
- Ship building firms
- Light, heat, and power companies
- Printing and publishing companies
- Plants that produce metal alloys
- Petroleum processing plants

862 HELPERS: FABRICATORS AND INSPECTORS

These people assist workers who make or inspect products. Some help shape, assemble, or paint products, and others help inspect or test products or equipment. They carry or truck materials and tools to and from the work area, measure and mix materials, and clean the equipment and work area. They may help lift and position equipment and workpieces, and load and unload materials on and from machines and conveyors. They may read meters, inspect finished work, and do other tasks to help with production work.

SAMPLE WORK ACTIVITIES

- Help a **STEEL POURER** pour molten metal into molds
 - . Place shovels and water hoses on a pouring platform
 - . Count molds to make sure that enough are present
 - . Measure molds and mark their filling heights
 - . Weigh materials and shovel them into the molds
 - . Shovel materials into molds
 - . Pour samples of molten metal into test molds
 - . Spray mold covers with water to cool them
- Help a **BLAST FURNACE KEEPER** tap a blast furnace
 - . Break slag from casting equipment, using hammers
 - . Refine troughs with sand
 - . Clean equipment and casting areas
- Help a **STOPPER MAKER** put together refractory stoppers
 - . Place steel rods in vices and bend them to a specified shape, using a sledge hammer
 - . Mix cement and clay with water to make mortar
 - . Carry materials to and from the work area
- Help a **RUB INSPECTOR** examine rub pads

- . Examine felt pads and point out defects
- . Straishten material so that it will rewind evenly
- Position electrical equipment, such as motors and generators, in a test area
 - . Connect electrical equipment for testing
 - . Build testing platforms
 - . Use a crane to lift electrical units
- Help a SPRAY PAINTER paint materials or products
 - . Move materials to work areas on a handtruck or dolly
 - . Fill containers with paint and thinner
 - . Install nozzles in spray guns
 - . Help lift finished pad rolls to a wrapping machine
 - . Help cut material to length
 - . Watch meters and report readings to a tester
 - . Replace screens and filters
 - . Clean surfaces to be painted
 - . Rack workpieces on a conveyor
 - . Inspect and mark finished pieces

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hours vary. Many jobs typically require shift work.

SAMPLE PLACES OF WORK

- Iron and steel mills
- Electrical equipment manufacturers
- Tobacco plants
- Factories that produce felt goods
- Barrel manufacturers
- Plants that produce abrasive and polishing products
- Companies that make prefabricated buildings
- Aircraft manufacturers
- Automobile manufacturers
- Welding shops

863 HELPERS: MECHANICS AND REPAIRERS

These workers carry tools and supplies, do routine tasks, and clean equipment and work areas for mechanics and repairers. They may help repair and maintain electrical and electronic equipment, thread pipe, solder, and run tests. They may help repair and maintain vehicles by changing oil, repairing parts, sanding bodies, or repairing upholstery. They may help service industrial machinery, taking it apart, greasing and oiling components, and reassembling it.

8632 HELPERS: VEHICLE AND MOBILE EQUIPMENT MECHANICS AND REPAIRERS

These people assist workers who repair and service cars, trucks, planes, or other vehicles. They may also help repair and adjust engines, pumps, and other power equipment used in construction work. They take machinery apart and may clean, adjust, and replace parts. They inflate tires, and fill gas tanks. They may polish trim, repair upholstery, or sand and paint vehicle bodies. They also hand out tools to workers, hold and position parts and tools while repairs are being made, and do other assigned tasks.

SAMPLE WORK ACTIVITIES

- Help workers who service and maintain cars, trucks, railcars, or other vehicles
 - . Take apart defective equipment, using handtools
 - . Remove rivets, using a punch press or drill
 - . Drill holes in replacement parts
 - . Sand vehicle bodies to prepare them for painting
 - . Repair worn upholstery, using a needle and thread
 - . Keep records of repairs made
- Help repair and adjust engines, pumps, and other power equipment used in construction work
 - . Wash parts and tools with gasoline
 - . Use jacks and hoists to move and position equipment
 - . Remove engines from vehicles for repairs
- Help service and repair aircraft and aircraft engines
 - . Adjust and replace parts, such as control cables, fuel tanks, and tires
 - . Disconnect instruments and fuel lines
 - . Help put together engines and control cables
 - . Inflate tires and fill gas tanks
 - . Straighten metal parts, using a hammer and sledge
 - . Bolt parts together
 - . Grease and oil parts
 - . Obtain parts from a stock room
 - . Clean tools and working areas
- Mount workbenches in mobile repair trucks
 - . Measure locations where machinery is to be installed
 - . Load trucks with handtools and spare parts

HOURS OF WORK/TRAVEL

- Some workers, such as those who assist RAILROAD LOCOMOTIVE REPAIRERS may be assigned to night and weekend shifts.

SAMPLE PLACES OF WORK

- Auto repair shops and body shops
- Auto service stations
- Construction companies
- Petroleum processing plants
- Pipe lines
- Aircraft manufacturers
- Airline companies
- Locomotive and car building and repair shops
- Companies that make and repair engines and turbines
- Ship building and repair firms
- Weapons industries
- Military services

B633 HELPERS: INDUSTRIAL MACHINERY MECHANICS AND REPAIRERS

These people assist workers who repair and service industrial machinery. They furnish them with tools and supplies and clean the work area and equipment. They help move, level, and install machinery. They also remove parts that need repair, hold materials and tools for the workers, oil machinery, and do other routine tasks. They use handtools, and may operate hoists, jacks, or other devices to remove, position, or take apart machinery units.

SAMPLE WORK ACTIVITIES

- Help a machinist install motors, pumps, and other ship machinery
 - . Drill holes in foundations for anchoring machinery, using powered drills
 - . Help move and level machinery, using portable jacks
 - . Bolt equipment to the deck and attach fuel and cooling lines
- Assist a worker who repairs and rebuilds textile machinery
 - . Carry or truck tools and parts to the work area
 - . Remove and take apart motors and other machine parts
 - . Clean parts and the work area, using cloths, solvents, and an air hose
 - . Oil and grease machinery
 - . Uncrate and assemble new machinery
- Assist a worker who repairs equipment used in processing ore
 - . Cut out worn parts of conveyor belts, using shears
 - . Remove worn pipe sections from air, oil, steam, and waterlines, using wrenches and a chain hoist
 - . Clean soot and scale from pipes, using a brush and air hose
 - . Haul pump and engine parts to and from machine shops
- Assist a mechanic who repairs and maintains equipment in a power plant
 - . Remove instruments from panelboards for repairs
 - . Remove nuts and bolts from machinery
 - . Hold parts in place while repair work is done
 - . Build scaffolds
- Help install industrial machinery
 - . Drill and break up concrete, using a jackhammer
 - . Dig trenches for machinery foundations
 - . Mix and pour concrete

HOURS OF WORK/TRAVEL

- HELPERS who assist boat engine mechanics may work more than 40 hours a week in warm months, due to increased boating activities.
- HELPERS who assist machinery repairers in plants and factories sometimes may be called to the plant at night or on weekends to help with emergency repairs.

SAMPLE PLACES OF WORK

- Any industry in which a great deal of machinery is used
- Boat and ship manufacturing companies
- Boat dealer shops, ship yards, and private marinas
- Chemical manufacturing plants
- Food products manufacturers
- Machinery manufacturers
- Marinas operated by Federal, State or Local governments
- Mining companies
- Oil companies
- Transportation equipment manufacturers
- Paper and rubber goods manufacturers
- Power plants
- Textile mills

8635 HELPERS: ELECTRICAL AND ELECTRONIC EQUIPMENT REPAIRERS

These people assist workers who repair and service electrical and electronic equipment. They take tools, parts, and equipment to and from work areas, position and hold parts while repairs are being made, and clean and oil equipment. They also may do such things as cut and thread pipe, operate hoists, solder metal, install filters, and test equipment. They use handtools, torches, measuring devices, and testing equipment.

SAMPLE WORK ACTIVITIES

- Help workers who repair and maintain electrical and electronic equipment
 - . Cut, thread, and join pipe using handtools
 - . Brush a soap solution over joints to test for leaks
 - . Position heavy equipment, using a hoist
 - . Cut, punch, and solder sheet metal ducts and parts
 - . Cement insulation in place over piping or tubing
 - . Pass electrical wires through ducts
 - . Splice wire connections
 - . Put together metal parts
 - . Grease and oil equipment
 - . Install air and water filters
 - . Take tools, parts, equipment, and appliances from a truck to customer sites, using a handtruck
 - . Measure pipes and connect them to feeder lines
 - . Remove defective parts from equipment
 - . Cut openings through walls, using a hammer and chisel
 - . Hold parts while a mechanic fastens them into position
 - . Burn old insulation from coils, using a blowtorch
 - . Clean parts with cleaning fluids and scrapers
 - . Call out test meter readings
 - . Place warning signs at repair sites
 - . Test equipment

HOURS OF WORK/TRAVEL

- These jobs often involve local travel to homes, office buildings, factories, and other places where equipment repair work is needed.

SAMPLE PLACES OF WORK

- Light, heat, and power companies
- Construction companies
- Telephone and telegraph companies
- Companies that install and repair environmental control devices
- Companies that sell and service heating or refrigeration equipment

8637 HELPERS: MISCELLANEOUS MECHANICS AND REPAIRERS

These people assist workers who repair and maintain equipment. They perform a variety of tasks. They furnish workers with materials, tools, and supplies. They clean work areas, machines, and equipment. They help install and move machines and equipment. They hold materials and tools while repairs are being made. They take equipment apart for repairs, repair or finish broken parts, and grease and oil equipment. They use handtools.

SAMPLE WORK ACTIVITIES

- Help a BLACKSMITH forge metal articles

- . Get equipment from the toolroom
 - . Cut metal to size, using a saw
 - . Light a furnace
 - . Turn control valves to regulate furnace temperature
 - . Lift metal parts from a furnace with tongs
 - . Place hot metal parts on an anvil or under a power hammer
 - . Strike parts with a sledge as the Blacksmith positions them over a die
 - . Grind surfaces of finished parts, using power grinders
 - . Sweep the floor
- Help a SERVICE MECHANIC install and repair pumps and tanks used in gas plants
 - . Cut and thread pipes, using pipe cutters and dies
 - . Clean, polish, and paint surfaces of parts
 - Help a MILLWRIGHT install and move machines and equipment
 - . Put up scaffolding
 - . Nail together forms
 - . Mix concrete
 - . Move materials with a lift truck
 - . Drill holes
 - . Measure, cut, and install hangers, using handtools and ladders
 - . Take machines apart, using a crowbar and wrenches
 - Help a SALVAGER repair defective valves and pipefittings removed from oil refinery pipelines
 - . Take valves apart, using wrenches
 - . Rethread pipefittings
 - . Sort fittings by type and size
 - Help an INSTRUMENT REPAIRER install, repair, and adjust control instruments
 - . Collect charts on recording instruments
 - . Watch instruments operate to detect faulty readings
 - . Drill holes in steel structures
 - . Repair and finish parts
 - . Paint instrument casings and panels
 - . Carry tools and materials
 - Help an ELEVATOR REPAIRER service and repair elevators
 - . Help move and raise elevator parts, using hoists, dollies, and rollers
 - . Use mechanics' handtools to take elevators apart
 - . Grease and oil equipment
 - Help a PINSETTER MECHANIC repair bowling equipment

HOURS OF WORK/TRAVEL

(NO INFORMATION)

SAMPLE PLACES OF WORK

- Blacksmith shops
- Gas plants
- Weapons warehouses
- Oil refineries and pipe lines
- Light, heat, and power companies
- Manufacturing plants
- Ship and boat building firms
- Railroad companies
- Construction companies
- Bowling lanes
- Repair shops
- Businesses that provide repair services

864 HELPERS: CONSTRUCTION TRADES

These workers carry tools and supplies, do routine tasks, and clean equipment and work areas for other construction workers. They may help brickmasons or hard tile setters by preparing surfaces. They may help electrical workers install or repair power equipment and wirings. They help plumbers, pipefitters, and steamfitters by measuring, cutting, and threading pipe, holding equipment during installation, and bolting fixtures in place.

8641 HELPERS: BRICKMASONS, STONEMASONS, AND HARD TILE SETTERS

These people help workers who lay brick, stone, or tile. They hand them tools and bring them materials and supplies. They also help prepare surfaces to be repaired and keep work areas, tools, and equipment clean. Some workers in this group help reline covers for incot molds. They do such things as pry and chip old mortar and clay from covers and mix fresh mortar. Others help repair and rebuild firebrick furnaces, ovens, and similar structures. They remove burned and damaged brick, mix mortar, and stack brick.

SAMPLE WORK ACTIVITIES

- Use a crowbar or chipping hammer to pry and chip firebrick and mortar
- Clean an incot mold with an oxyden torch
- Carry firebrick to a repair platform
- Mix mortar, using a power mixer
- Use a bar, hammers, chisels, and a wire brush to clean surfaces in a firebrick oven
- Sweep and remove refuse from casings
- Carry tools and materials to a work site
- Stack bricks for heating

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Iron and steel industries
- Companies that repair or rebuild firebrick furnaces, ovens, and ladles
- Construction companies
- Industries that produce coke

8642 HELPERS: CARPENTERS AND RELATED WORKERS

These worker help carpenters and other workers install and repair wooden structures. They cut wood to specified sizes, drill bolt holes, and do many other tasks to help build parts of ships or other structures. They also help carpenters by bringing them tools and materials and keeping work areas clean and orderly. Some workers in this group help put up support posts in mines. They do such things as hold timbers and posts while they are sawed and nail together timbers.

SAMPLE WORK ACTIVITIES

- Use a portable powersaw to cut wooden fixtures to certain sizes
- Hold paneling in place while a Joiner attaches it to battens
- Cut sound-proofing material into certain shapes
- Tape seams of insulation so the joints will be smooth
- Spread plastic cement on decks to be covered with tile

- Cut tile to fit in the corners of decks
- Use a hand sander to remove tool marks and ridges from boat surfaces
- Assemble plates, bolts, and other metal fittings
- Drill bolt holes in timber
- Hold timber in place while it is sawed
- Nail timbers to form supports in a mine

HOURS OF WORK/TRAVEL

NO INFORMATION

SAMPLE PLACES OF WORK

- Mining and quarrying companies
- Ship-building companies
- Contracting firms that provide carpenter services
- Construction companies

8643 HELPERS; ELECTRICAL AND POWER TRANSMISSION INSTALLERS

These people help electrical workers install or repair power equipment and wiring. They unload and load tools and equipment, and hand tools to workers as they are needed. They help keep work areas clean and orderly. They may dig ditches and rig scaffolds or hoists. They may remove and replace sections of wiring. They may measure, cut, and thread pipe conduits. They also may put together parts of power equipment. They use many kinds of handtools to do their work.

SAMPLE WORK ACTIVITIES

- Place barricades around open manholes to protect workers and the public from injury
- Dig trenches and lower tools to workers
- Break up concrete, using an air hammer
- Rig scaffolds and hoists used to move heavy machine parts
- Trim trees and clear brush around work areas
- Unload tower parts and electrical hardware from trucks
- Bolt parts of electrical towers together
- Use a handline to raise and lower hardware and tools to workers on a tower
- Help string transmission cable
- Solder wires together
- Measure, cut, and bend wires and conduits
- Drill holes for wiring, using a power drill
- Replace fuses, bulb, and switches in electrical equipment
- Use a hacksaw to cut pipe conduit to certain lengths
- Make support brackets from strap iron strips
- Use stripping pliers to strip insulation from wire ends

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Light, heat, or power companies
- Companies that build or repair boats or ships
- Electrical contractors

8644 HELPERS; PAINTERS, PAPERHANGERS, AND PLASTERERS

These HELPERS assist workers who paint, plaster, or paper walls and other surfaces. They unload and load materials and tools and hand tools and supplies to workers as they are needed. They keep work areas clean and orderly. They also do such things as strip paint and dirt from surfaces, fill cracks, and smooth surfaces to be finished. They may use sanding and buffing equipment as well as a variety of handtools to do their work.

SAMPLE WORK ACTIVITIES

- Measure and pour chemicals into stripping tanks used to remove paint from objects
- Place objects such as cabinets and metal furniture into stripping tanks to remove old paint
- Fill cracks in plaster surfaces with putty
- Use a wire brush and sandpaper to smooth surfaces to be painted
- Put masking tape on surfaces not to be painted
- Carry tools and supplies from one work area to another
- Clean work areas before and after jobs are done

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Companies that repair or build ships and boats
- Construction companies

8645 HELPERS; PLUMBERS, PIPEFITTERS, AND STEAMFITTERS

People in these jobs assist workers who install and repair plumbing. They unload materials and tools and carry them to work sites. They clean work areas, tools, and equipment. They also hold pipes in place while they are being bent, threaded, or installed. They may bolt fixtures in place and cut or drill holes into which pipes will fit. They may take apart and remove old pipes or fixtures. They may help repair equipment. They use many different handtools to do their work.

SAMPLE WORK ACTIVITIES

- Help a pipefitter install plumbing in a ship or building
- Order tools and equipment for workers to use
- Fill pipes with sand to help them keep their shape while they are bent
- Hold pipes while other workers install them
- Screw and bolt fixtures in place
- Dip pipe into chemicals to remove dirt, oil, and scale
- Clean shop machines with cleaning solutions and rags
- Sweep work areas
- Cut or drill holes in walls so pipes will fit through them
- Mount pipe hangers and brackets on walls and ceilings
- Take apart and remove worn or damaged pipe
- Help another worker install a gas burner
- Carry handtools to and from work areas
- Use handtools to disconnect meters and regulators

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Light, heat, and power companies
- Construction companies
- Ship building companies
- Any company that hires plumbers, pipefitters, or steamfitters
- Waterworks
- Plumbing contractors

B646 HELPERS: SURVEYOR'S

SURVEYOR'S HELPERS work with survey crews to measure land or water areas and collect information for maps and charts. They do much of the physical work involved in surveying. They clean brush and debris from survey lines, and carry tools and equipment from place to place. They cut and mark stakes and drive them into the ground to show grade settings or mark boundaries. They also measure distances between survey points, and hold and move rods and targets so that survey workers can sight in on them.

SAMPLE WORK ACTIVITIES

- Hold levels or rods so surveyors can figure out the elevation of land
- Lay out stakes for a mining or mapping survey
- Call out instrument readings
- Measure distances between points, using a steel tape
- Mark measuring points with a marking crayon
- Use a hammer or hatchet to drive stakes into the ground
- Cut and clear brush and trees from the line of a survey
- Measure the depth of water at points along a waterway
- Use a lead-weighted line to mark the depth of water

HOURS OF WORK/TRAVEL

- SURVEYOR'S HELPERS may travel to survey sites and spend some nights away from home.

SAMPLE PLACES OF WORK

- Government agencies, such as the U.S. Geological Survey, the Bureau of Land Management, or the U.S. Forest Service
- Construction companies
- Engineering and architectural firms
- Surveying companies
- State and local agencies

B648 HELPERS: OTHER CONSTRUCTION TRADES

These people assist workers in the construction trades. This includes workers who build and repair roads and buildings, cover floors, finish concrete, pave surfaces, install roofs, and do similar work. They perform a variety of tasks. They furnish workers with materials, tools and supplies. They clean work areas, machines, and equipment. They hold materials and tools while work is being done. They may help put up and move scaffolds, connect pipes, drill holes in concrete, or perform other tasks. They use a variety of handtools.

SAMPLE WORK ACTIVITIES

- Assist a CEMENT SPRAYER to apply stucco, mortar, or concrete to earth, masonry, or steel surfaces
 - . Move and hold the supply hose while spraying progresses, using a rope sling
 - . Drag a screed over finished surfaces to cut and clean spots
 - . Cut and square corners, using a trowel
 - . Help put up and move scaffolds and connect pipes
- Assist in the drilling of holes used to install pipelines under highways, railroads, or canals
 - . Lay foundation timber for a boring machine
 - . Place braces under the timber to hold the machine in place
 - . Shovel dirt from the hole
 - . Remove water from the boring machine pit, using a portable pump
 - . Weld sections of casings together
- Assist a CARPET LAYER to lay carpeting on floors and stairs
 - . Stretch carpeting and tack it to floors
 - . Cut rug padding to size and tack it in place on the floor with a hammer
 - . Trim carpeting to fit around openings, using a knife
 - . Nail metal treads across door openings to hold the carpet in place
- Assist a AWNING HANGER to install canvas, wood, metal, or plastic awnings
 - . Dig post holes, using a post hole digger or powered drill
 - . Mix concrete in a mortar box or wheelbarrow, using a hoe or shovel
 - . Drill holes
 - . Bolt and screw brackets to buildings to hold the awning frame
 - . Hold awnings while they are being installed
- Assist a HOUSE MOVER to move buildings from one site to another on a trailer, truck, or rollers
 - . Disconnect water and sewer lines, using wrenches, a sledge hammer, and a chisel
 - . Raise buildings, using screw jacks and shoring blocks
 - . Position timbers or steel beams under buildings as directed
 - . Lower buildings onto a trailer or roller and attach towing cables
- Help a DIVER get into a diving suit and complete underwater dives
 - . Examine equipment for safety
 - . Hand equipment to the diver and help the diver into the water
 - . Attend the lifeline and phone to receive signals from the diver
 - . Check the time when the diver went under the water
 - . Check weather conditions and the air compressor readings for safe conditions

HOURS OF WORK/TRAVEL

- These jobs involve travel to construction sites. Some jobs may require travel to out-of-town locations.

SAMPLE PLACES OF WORK

- Construction companies
- State and city public works departments
- State highway departments
- Public utility companies
- Stores that sell and install carpeting
- Companies that provide house moving services
- Businesses that provide underwater diving services

065 HELPERS: EXTRACTIVE OCCUPATIONS

These people assist workers who drill oil wells or blast, cut, or move materials to be mined. They unload and load materials and furnish workers with materials, tools, and supplies. They clean the work area, machines, and equipment. They may carry explosive devices, connect fuses or wires to firing devices and charges, and set off explosive charges. They may operate equipment to clean oil or gas wells. They may use handtools and power tools to assemble drilling equipment. They may set up instruments, drive trucks, or repair machinery.

SAMPLE WORK ACTIVITIES

- Help a blaster in placing and setting off explosives used to loosen earth and rock
 - . Carry explosives to the blasting area
 - . Place explosive devices in drilled holes, as directed
 - . Shovel earth or drill cuttings into holes after charges have been placed
 - . Pack down the earth around charges, using a pole or shovel
 - . Connect lead wires to firing devices
 - . Fire charges on signal from the blaster
- Clean out and restore old or damaged gas or oil wells
 - . Unload cleanout tools and equipment
 - . Use hand-operated jacks to align a hoist cable over a borehole
 - . Assemble and attach cleanout tools, such as bailers and swabs, to the cable
 - . Guide tools into the borehole
 - . Dump mud, water, and debris removed from the well
 - . Take apart and clean tools and equipment
 - . Oil and grease machinery
- Bore or blast holes in rock and dirt at a strip mine
 - . Signal the machine driller to position the machine
 - . Replace drill stems, burners, casings, cables, and hoses
 - . Pull electric cables and water hoses clear of machine treads
 - . Watch for unsafe conditions
 - . Collect ore samples for lab tests
- Help remove shale from an open pit mine
 - . Shovel loose shale from the travel path of mining machines
 - . Help lay tracks and bed supports for a mining machine, using a pick, shovel, sleds, hammer, and other handtools
- Help a driller operate machinery to drill oil or gas wells
 - . Assemble casings and pipe sections, using hand and power wrenches and tongs
 - . Read gauges that show the pressure on drilling tools at the bottom of the well
 - . Repair drilling machinery, slush pumps, and derricks
 - . Drive an equipment truck to worksites
 - . Unreel and connect electrical cables

HOURS OF WORK/TRAVEL

- In many of these jobs, workers may move from place to place, since work at a particular site may be completed in a few months. Some workers may be away from home for weeks or months at a time.

SAMPLE PLACES OF WORK

- Oil companies
- Companies that specialize in drilling or cleaning oil and gas wells
- Mining and quarrying companies
- Construction companies
- Any industry that does its own blasting work

87 HANDLERS, EQUIPMENT CLEANERS, AND LABORERS

These workers carry tools and supplies, do routine tasks, and clean work areas and equipment for other workers. They may help those who drill for oil or blast rock in mining operations. They may do routine construction work, tearing down buildings, setting up scaffolds, or digging holes. Others collect trash, move ships' cargo into holds or storage areas, bag groceries, or move products off conveyor belts.

871 CONSTRUCTION LABORERS

CONSTRUCTION LABORERS do much of the routine physical work on all types of construction projects. They also help to tear down buildings and other structures. They do such things as put up scaffolding, set braces to support structures, and clean up work areas. They may paint surfaces, dig holes, mix and spread concrete, and clean work tools. They also help unload materials and equipment and take them to carpenters, masons, and other workers. They do many types of jobs to help construction workers.

SAMPLE WORK ACTIVITIES

- Dig, spread, and level dirt and gravel
- Clean tools and equipment
- Mix, pour, and spread concrete
- Remove wallpaper
- Paint woodwork and hang curtains
- Use a stapler and screwdriver to make minor repairs to wall panels and trim
- Use a broom, mop, and dustcloth to clean the inside of a building
- Set fire to waste products
- Signal workers when to hoist equipment
- Remove chains from hoisted material
- Lay railroad track
- Hold building materials in place for other workers
- Fill joints with asphalt
- Collect and dispose of explosive wastes
- Pour water on explosive materials so they will not explode

HOURS OF WORK/TRAVEL

- Many of these jobs are not full time. A worker may work at one job or be transferred from job to job. Many of these jobs are seasonal.

SAMPLE PLACES OF WORK

- Construction contractors
- State and city public works departments
- State highway departments
- Public utility companies
- Companies that make prefabricated buildings
- Paving and excavating companies

872 FREIGHT, STOCK, AND MATERIAL MOVERS, HAND

These workers move materials, freight, or stock by hand or use handtrucks. They may move cargo onto loading docks, into ships' holds, or to storage areas. They may collect trash and operate garbage trucks. Some receive and sort materials and supplies, bag groceries, stock shelves, or move materials to work areas. Some workers feed materials into machines or remove products from manufacturing or packaging machines.

8722 GARBAGE COLLECTORS

These workers collect trash and garbage from containers along an assigned route in a city or town. They load trash and garbage into a truck to be taken to a dump. They may drive the garbage truck. They also may operate a device on the truck that dumps trash in a bin into the truck body. In some jobs, they may empty trash from the truck at a dump or landfill.

SAMPLE WORK ACTIVITIES

- Collect trash and garbage on an assigned route
- Dump trash from containers into a truck
- Operate a hoist to lift trash and garbage onto the rear of a truck
- Empty trash from a truck at a dump or landfill

HOURS OF WORK/TRAVEL

- GARBAGE COLLECTORS generally have a standard 35-40 hour work week. However, in times of emergencies (such as floods or disasters), they may have to work nights and weekends.

SAMPLE PLACES OF WORK

- City and county sanitation departments
- Private trash collection firms

8723 STEVEDORES

STEVEDORES load and unload ships' cargo by hand or by using handtrucks. They move cargo to the wharf and stack it on pallets or boards to be loaded onto ships. They attach slings to the cargo so it can be lifted or lowered, and they guide the loads as they are moved to keep them from swinging. They put cargo that has been unloaded from ships into storage sheds. They also stack loaded cargo in ships' holds and shore (or tie) it down to keep it from shifting during the voyage.

SAMPLE WORK ACTIVITIES

- Carry cargo to a wharf
- Stack cargo on pallets or cargo boards to be loaded onto a ship
- Stack cargo in transit sheds
- Stack cargo in ships' holds
- Attach slings to cargo so it can be lifted
- Guide loaded slings to keep them from swinging
- Tie down cargo in ships' holds to keep it from shifting during voyages

HOURS OF WORK/TRAVEL

(No Information)

SAMPLE PLACES OF WORK

- Shipping firms
- Warehouse and storage companies at a dock or wharf

8724 STOCK HANDLERS AND BAGGERS

STOCK HANDLERS receive and sort materials and supplies and prepare them for delivery to work areas or for storage. They unwrap, mark, and lay out materials received, and then sort and stack them according to work orders. They may use handtrucks to deliver materials or equipment to workers. BAGGERS bag groceries in sacks or cartons and carry them to customers' cars. They also collect shopping carts from the parking lot, replace checkout counter supplies, clean store areas, and stack goods on counters.

SAMPLE WORK ACTIVITIES

- Deliver materials and equipment to workers, as requested
 - . Read work orders to determine the amounts and types of materials to be delivered to work areas
 - . Unwrap materials and prepare them for delivery to work areas
 - . Record the lot numbers and amounts of materials laid out for or delivered to workers
 - . Stack materials or equipment on a handtruck for delivery to workers
- Bag groceries in sacks or cartons at a checkout counter
 - . Carry groceries to customers' cars
 - . Collect shopping carts from parking areas and return them to the store
 - . Replace cleaning and wrapping supplies used at a food checkout
 - . Clean work areas and carry empty bottles and trash to the storeroom
 - . Price articles and stack them on shelves in a store

HOURS OF WORK/TRAVEL

- STOCK HANDLERS may work on shifts. In some cases, evening or weekend work may be required. Part-time work may be available in some jobs.
- BAGGERS may work during evenings and weekends. They also may work part-time.

SAMPLE PLACES OF WORK

- Businesses
- Factories and plants
- Government agencies
- Grocery stores, supermarkets, and other retail stores
- Hospitals and other institutions

8725 MACHINE FEEDERS AND OFFBEARERS

MACHINE FEEDERS and OFFBEARERS feed materials into machines and remove finished products from them. Generally, the machines run automatically or are operated by other workers. The types of materials they load and unload depend on the job, but may include paper, plastic, metal, glass, cloth, food, or wood.

SAMPLE WORK ACTIVITIES

- Shovel metal scrap onto a conveyor belt that leads into a machine
- Feed fish into machines that bone, skin, or cut them
- Dump ingredients into grinding machines
- Unload a furnace in which bones are charred to produce charcoal
- Place tubes of a cork mixture into slots of a machine that packs them into rods
- Feed mirror glass onto conveyor belts that lead into washing and drying machines
- Spread fur fibers on a conveyor leading to a hat-forming machine
- Load pelts from machines onto handtrucks
- Place dollies at the end of a stacking machine to catch tin sheets

- Feed paper cups into a machine that finishes their edges
- Remove furniture panels from machine conveyors and stack them on handtrucks
- Feed wooden blocks into a machine that cuts them into match sticks
- Pull sandstone slabs coming out of a machine onto a turntable
- Remove shirts from a conveyor and fold and stack them
- Line up shoe parts with guides in a machine bed
- Feed rolls of cardboard and fabric into a machine that forms them into cardboard necks
- Place cans on the conveyor belt of a machine that fills them with tobacco products
- Open damaged sacks of flour and dump their contents into chutes

HOURS OF WORK/TRAVEL

- MACHINE FEEDERS AND OFFBEARERS may work in factories or plants that require evenings or shift work.

SAMPLE PLACES OF WORK

- Any industry, including:
 - . electroplating companies
 - . laundry and drycleaning businesses
 - . iron and steel mills
 - . tinware industries
 - . concrete manufacturers
 - . motor transportation companies
 - . rubber goods industries
 - . meatpacking companies
 - . wallpaper companies
 - . metal foundries

8726 FREIGHT, STOCK, AND MATERIAL MOVERS, N.E.C.

These workers load and unload materials onto and from trucks, railroad cars, containers, machines, and storage areas. They work in a wide variety of industries and settings. Their jobs range from dumping grain or coal into railroad cars to positioning cameras and other equipment for movie productions. Many workers also perform other tasks such as cleaning or sweeping work areas and oiling equipment.

SAMPLE WORK ACTIVITIES

- Rake flue dust from machines in an ore refinery
- Move leaf tobacco on dollies from a storage room to line workers in a tobacco processing plant
- Shovel ice into chicken parts containers to prevent spoilage
- Load clay products onto kilncars and deliver them to kilns for burning
- Tend a conveyor that moves cement from railroad cars into storage containers
- Haul cement from storage areas in a concrete mixing plant
- Straighten lumber on a conveyor to align it for sawing or trimming
- Clean work areas in a sawmill
- Move logs from a pond to a log deck at a sawmill
- Sweep the dock area at a shipping yard
- Clean trucks used to haul goods
- Help a FERRYBOAT OPERATOR operate a cable-guided ferryboat to move freight
- Move freight onto a ferryboat, using a handtruck
- Grease and oil equipment
- Dump materials, such as coal, chemicals, grain, sugar, or ore, from railroad cars or trucks
- Collect waste materials, such as lumber, paper, or scrap metal, in a factory or plant
- Push mine cars onto and off a mine shaft case used to carry mine workers
- Lower and raise stage curtains and scenery at a theater
- Move cameras and other equipment into position for radio, TV, or movie productions

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hours and travel requirements vary.

SAMPLE PLACES OF WORK

- Factories and plants that produce:

- . Tobacco products
- . Refined ores
- . Chewing gum
- . Food products
- . Concrete products
- . Glass
- . Electrical equipment
- . Manufactured buildings
- . Coke products
- . Tinware
- . Ammunition
- . Phonographs

- Sawmills
- Railroad, air, truck, and water freight companies
- Museums
- Radio and TV broadcasting stations and networks
- Woodworking shops
- Construction companies
- Movie studios
- Mining and quarrying companies

873 GARAGE AND SERVICE STATION RELATED OCCUPATIONS

These workers service cars and other vehicles. They fill gas tanks, wash windshields, change oil, and replace oil filters and fan belts. They may also sell and install batteries, headlights, windshield wiper blades, and other items. Most of these tasks can be done with simple handtools. They may help take inventory of auto parts, set up displays, take payments, and keep business records. Most work in auto service stations, but some service vehicles owned by business or government.

SAMPLE WORK ACTIVITIES

- Fill the fuel tanks with gas or diesel fuel
- Check the oil, water, and brake fluid levels in vehicles
- Add water to radiators and batteries, as required
- Wash windshields
- Change the oil in vehicles
- Replace oil filters, airfilters, and fan belts on cars
- Repair or replace tires on vehicles
- Wash and wax vehicles
- Collect payments from customers and make change
- Help take inventory of auto parts
- Prepare daily reports of fuel, oil, and auto parts sold
- Put antifreeze in radiators
- Refuel trucks and buses in a company garage
- Use a forklift to move oil drums
- Check fuel and mileage records of trucks
- Test batteries and tires
- Grease parts of vehicles, such as the springs and joints

HOURS OF WORK/TRAVEL

- Full-time SERVICE STATION and GARAGE ATTENDANTS work 40 hours a week or more. Because many gas stations are open at least 12 hours a day, 6 days a week, work schedules in these places may include evenings, weekends, and holidays.
- Many of these jobs offer opportunity for part-time work.

SAMPLE PLACES OF WORK

- Gasoline service stations
- Self-service gas stations
- Garages
- Business and government agencies that have their own auto maintenance shops

874 PARKING LOT ATTENDANTS

These workers help customers park their cars at a parking lot or storage garage. They may park cars for customers or direct them to parking spaces. They tag each car so it can later be found. They also record the time each car enters and leaves the parking area. They often help returning customers find their cars. They also patrol parking areas to prevent thefts, and collect parking fees from customers. Some service cars with gas, oil, and water.

SAMPLE WORK ACTIVITIES

- Place numbered tags on the windshields of cars to be parked
- Hand customers numbered tags to be used in locating their parked cars
- Record the time each car enters a parking area
- Drive cars to parking spaces
- Point out parking spaces for customers to use
- Walk through a parking lot to make sure parked cars are not entered by thieves
- Take numbered tags from customers and show them where their cars are parked
- Deliver parked cars to returning customers
- Fill cars with gas
- Collect fees from customers, based on the time the cars were parked

HOURS OF WORK/TRAVEL

- In some jobs, PARKING LOT ATTENDANTS may work during nights and weekends.

SAMPLE PLACES OF WORK

- Parking garages
- City parking lots
- Private parking lots
- Hotels
- Restaurants
- Car service stations

875 VEHICLE WASHERS AND EQUIPMENT CLEANERS

Workers in these jobs clean machinery and equipment. The type of equipment they clean depends upon the job. For example, some clean such items as storage tanks, cabinets, filter screens, or dies. Others clean equipment ranging from vehicles and plant machinery to ovens, furnaces, and pipelines. They use many different types of devices, tools, and materials to clean equipment. These include vacuum cleaners, air hoses, brooms, scrapers, cloths, chemicals, water, brushes, and a variety of handtools.

SAMPLE WORK ACTIVITIES

- Sandblast paint, grease, and tar from metal objects
- Clean gold dust from blankets used to process ore in a grinding mill
- Use hammers to remove carbon from anode assemblies
- Scrape the insides of grain bins and spray them with pesticides
- Use steam and soap to remove grease from handtrucks
- Clean coils of steam kettles used for cooking foods
- Force jets of water through dies to clean them
- Use brushes and cleaners to clean stone
- Dip plates of cigar-making machines into boiling water to loosen dirt
- Clean carts used to move dead animals
- Clean tanks, vats, kettles, and chutes used in making paint products
- Use brooms, brushes, and shovels to clean the bottoms of lime kilns
- Sterilize equipment used to process food
- Dip steel nets into soapy water to remove ink and dust
- Use a water hose and air hose to clean grease and lint from ship pipelines

HOURS OF WORK/TRAVEL

- Generally, these workers have a standard 35-40 hour work week.

SAMPLE PLACES OF WORK

- Any factory, plant, or business that uses machinery or equipment in its operations

876 MISCELLANEOUS MANUAL OCCUPATIONS

These workers perform many routine jobs that are done by hand. They may package or wrap materials by hand, inspecting items, labeling cartons, and stacking them on loading docks. Others wash and clean vehicles and equipment such as ovens, storage tanks, pipelines, and plant machinery. Some service vehicles by filling gas tanks, changing oil, and taking payments. Some park cars in garages or direct customers, issue tags, and patrol parking areas.

8761 HAND PACKERS AND PACKAGERS

These workers package materials or products by hand. They work in a variety of industries and settings. The products and materials they may work with range from food or tobacco products to manufactured goods. They fill containers with materials and wrap articles in paper, plastic film, or other packing materials. They may clean, weigh, inspect, and sort articles before they are packaged. They may also stack or load filled containers and stamp information on cartons or labels.

SAMPLE WORK ACTIVITIES

- Examine products for defects before they are wrapped or packed
- Weigh products
- Stamp information on products
- Weigh, wrap, and prepare poultry for shipment or storage
- Roll and tie cuts of meat to form roasts at a meat packing plant
- Fill wooden tubs, barrels, or containers with processed food products at a cannery
- Fill wooden buckets with distilled liquor to prepare them for aging
- Clean and pack fish eggs
- Tie or bolt moving parts of weighing scales before they are packed and shipped
- Load ammunition charge bags with powder
- Inspect and pack hats or caps at a hat factory
- Wrap motorheads with paper and insert them in bags or cartons
- Fasten paper bands around bolts of cloth to prepare them for shipping
- Pack tobacco products into cartons
- Pack paired shoes in cartons for shipment
- Wrap food in plastic film at grocery stores
- Keep records of items packed
- Load containers onto handtrucks
- Push cartons of products onto a conveyor

HOURS OF WORK/TRAVEL

- These people work in a variety of industries. Work hours may vary from job to job.

SAMPLE PLACES OF WORK

- Factories and plants that produce:

- . Ammunition
 - . Balances and scales
 - . Boots and shoes
 - . Chewing gum
 - . Distilled liquors
 - . Fabrics
 - . Fireworks
 - . Furniture
 - . Garments
 - . Gold leaf and foil
 - . Hats and caps
 - . Nuts and bolts
 - . Paper goods
 - . Rubber goods
 - . Textiles
 - . Tobacco products
- Slaughter houses and meat packing plants
 - Food canning and preserving plants
 - Farms
 - Drycleaning plants and laundries
 - Wholesale warehouses
 - Sawmills
 - Retail stores

8769 MANUAL OCCUPATIONS, N.E.C.

People in these jobs perform tasks that do not require special trainings. They generally work with their hands. They work in a wide variety of industries and settings. Their work ranges from hand delivering phone books to homes, to cleaning floors and equipment in a plant. They may tend a machine, load and unload materials, or cut materials to size for further processing. These are only a few examples of the things they may do.

SAMPLE WORK ACTIVITIES

- Deliver phone books to homes and businesses on foot
- Hand out ads, sample products, or coupons on a street or go from home to home
- Carry sample cases for a sales representative during sales trips to businesses
- Open bundles of soiled laundry received at a laundry plant
- Weigh laundry on scales
- Load and unload washing machines, using a power hoist
- Unload soiled linen from trucks
- Sort, fold, and stack items
- Wash articles, such as curtains and underclothing by hand
- Clean the linings of fur garments by scrubbing them with a brush dipped in cleaning solution
- Pull socks over heated metal forms to dry and finish them
- Give curb service to customers at a laundry
- Shovel scrap metal into furnace melting pots
- Twist round strips of dough to form pretzels
- Cut leaf tobacco to size
- Remove pieces of shell from shellfish meats before the meat is canned
- Cut fruit into cubes or pieces for use in candy fillings
- Remove stems from tobacco leaves
- Crack nuts, such as pecans and walnuts, using a vise
- Load tobacco on racks in drying rooms
- Ladle fruit sauce over ice cream pies
- Load wire racks with cookies to be iced
- Soak meat in water to prepare it for smoking
- Clean floors and equipment in a sugar processing plant
- Shovel mud and coal from working areas in a coke processing plant
- Use a handtruck or chain hoist to load containers of gas onto vehicles
- Fill molds with latex to cast foam rubber products
- Dump cotton lintens into tubs for bleaching
- Carry frames to and from embroidery machines
- Clamp stacks of cemented wooden pencil slats to hold them while the cement dries
- Tend a machine that chars new smoking pipe bowls
- Tear pieces from hemmed bolts of cloth to help make handkerchiefs
- Clean grease and cement from finished shoes
- Signal another worker to move cargo from a dock to a ship's hold
- Mark products with information, such as size, color, or grade
- Clean and sweep show areas after each performance at a circus

HOURS OF WORK/TRAVEL

- These people work in a wide variety of industries. Work hours and travel requirements vary.

SAMPLE PLACES OF WORK

- Manufacturing plants
- Companies that provide business services
- Wholesale trade firms
- Laundries and dry-cleaning plants
- Foundries
- Meatpacking plants
- Dairies
- Bakeries
- Oil refineries

9099 MILITARY OCCUPATIONS

These workers perform jobs that are essential to military operations but that do not have civilian counterparts. Examples of occupations that are unique to the military include infantry and artillery personnel, reconnaissance and intelligence personnel, camouflage specialists, and combat surveillance and target acquisition crewmembers. Occupations that are similar to civilian occupations are classified under their nonmilitary titles.

91 MILITARY OCCUPATIONS

People in these jobs are involved in military operations activities for the armed services. Their duties range from training recruits in the basics of service life to operating military weapons and machinery during combat or in training. Most workers specialize in a particular field, such as field artillery, radar, military intelligence, or surveillance. For more information about these jobs, contact your nearest naval, army, air force, or marine recruiting office.

SAMPLE WORK ACTIVITIES

- Supervise workers who field artillery and radar equipment to control artillery fire and naval gunfire
 - . Prepare field orders, training, and status reports
 - . Advise worker assignments and promotions
 - . Prepare schedules for unit training
 - . Conduct classes on unit drill, military courtesy, and similar subjects
 - . Maintain discipline
- Supervise workers during training and field maneuvers
 - . Direct workers in preparing weapons and equipment for combat operations
 - . Direct workers in setting up command posts
 - . Direct workers in preparing unit letters, reports, schedules and rosters
 - . Direct workers in distributing ammunition, food, and other supplies
- Supervise workers who provide combat surveillance and target information
 - . Advise the commanding officer on matters related to troop welfare
 - . Direct workers in preparing charts and maps
- Instruct new recruits
 - . Instruct recruits in the basics of service life, discipline, physical fitness, and pride
 - . Train recruits in close order drill
 - . Instruct recruits in orders for gravel duty, hygiene, first aid, and care of equipment
 - . Lecture on military history and tradition
 - . Help conduct parades and reviews
- Instruct workers in survival and rescue techniques
 - . Show workers how to build emergency shelter and animal traps
 - . Show workers how to use life support equipment
 - . Teach workers how to escape and evade enemies
- Collect information on enemy agents and groups
 - . Question suspects and informants
 - . Conduct security surveys
 - . Inspect installations
 - . Prepare security clearances
- Help prepare plans and procedures for use during disasters

- . Inspect protective equipment and direct needed repairs
- . Direct the placement markings, and stockpiling of radiation shelters
- . Provide information on chemical weapons and their effects
- . Test areas for toxic agents
- Service and repair target aircraft
- Operate sound equipment to detect the location of enemy firings
- Drive military vehicles to gather information about land features and enemy strength and location
- Observe and report enemy locations
- Collect military intelligence information
- Operate flame throwers and other support equipment
- Fire automatic weapons or machine guns during combat or in training
- Load and fire field artillery guns

HOURS OF WORK/TRAVEL

- Work hours in military occupations vary by assignment, but may often include evenings, nights, weekends, and holidays. Leave from service is based upon factors such as time in service and local staff requirements.
- These jobs generally involve travel.

SAMPLE PLACES OF WORK

- Military services

9899 MISCELLANEOUS OCCUPATIONS

99 MISCELLANEOUS OCCUPATIONS

People in these jobs perform work which cannot be classified under other SOC groups. GRADUATE ASSISTANTS assist a faculty or staff member in a college or university. SUPERVISORS direct the activities of workers in a government agency. CONSULTANTS advise clients on ways to solve problems in their specialty area. SCUBA DIVERS perform various underwater jobs, wearing diving gear.

SAMPLE WORK ACTIVITIES

- Assist a faculty or staff member in a college or university
 - . Help in the library
 - . Develop teaching materials
 - . Assist in lab or field research
 - . Prepare and give exams
 - . Assist in student conferences
 - . Grade papers and exams
 - . Teach low-level courses
- Supervise workers in a government agency
 - . Review workloads, schedules, assignments, and ongoing work
 - . Plan unit activities
 - . Assign duties of workers
 - . Do research
 - . Write technical reports and papers
 - . Work on special projects
 - . Review worker reports for clearness, completeness, and accuracy
 - . Plan and conduct training sessions for new workers
 - . Approve leave requests
 - . Interview job applicants
- Consult with clients to advise them on ways to solve problems
 - . Talk with clients to define their problems
 - . Conduct studies or surveys to get information needed to solve problems
 - . Advise clients on ways to solve problems
- Perform various underwater jobs, wearing diving gear
 - . Swim from a boat, dock, or shore to jobsites
 - . Dive to locate or recover sunken cars, boats, logs, or other items
 - . Swim to the bottom and fasten lines
 - . or chains around heavy objects
 - . Pick up lightweight objects and carry them to the surface
 - . Search for bodies
 - . Repair underwater equipment

HOURS OF WORK/TRAVEL

(NO INFORMATION)

SAMPLE PLACES OF WORK

- Colleges and universities
- Government agencies
- Consulting firms
- Firms that provide diving services
- For yourself, as an independently employed specialist

9999 MISCELLANEOUS OCCUPATIONS

99 MISCELLANEOUS OCCUPATIONS

People in these jobs perform work which cannot be classified under other SOC groups. GRADUATE ASSISTANTS assist a faculty or staff member in a college or university. SUPERVISORS direct the activities of workers in a government agency. CONSULTANTS advise clients on ways to solve problems in their specialty area. SCUBA DIVERS perform various underwater jobs, wearing diving gear.

**Numerical List of Titles
of Occupational Groups**

STANDARD OCCUPATIONAL CLASSIFICATION MANUAL

Executive, Administrative and Managerial Occupations

11 OFFICIALS AND ADMINISTRATORS, PUBLIC ADMINISTRATION

111 LEGISLATORS

112 CHIEF EXECUTIVES AND GENERAL ADMINISTRATORS

113 OFFICIALS AND ADMINISTRATORS, GOVERNMENT AGENCIES

1131 Judicial, Public Safety and Corrections Administrators

1132 Human Resources Program Administrators

1133 Natural Resources Program Administrators

1134 Rural, Urban, and Community Development Program Administrators

1135 Public Finance, Taxation, and Other Monetary Program Administrators

1139 Officials and Administrators, Public Administration, Not Elsewhere Classified

12-13 OFFICIALS AND ADMINISTRATORS, OTHER

121 GENERAL MANAGERS AND OTHER TOP EXECUTIVES

122 FINANCIAL MANAGERS

123 PERSONNEL AND LABOR RELATIONS MANAGERS

124 PURCHASING MANAGERS

125 MANAGERS; MARKETING, ADVERTISING, AND PUBLIC RELATIONS

126 MANAGERS; ENGINEERING, MATHEMATICS, AND NATURAL SCIENCES

127 MANAGERS; SOCIAL SCIENCES AND RELATED FIELDS

128 ADMINISTRATORS; EDUCATION AND RELATED FIELDS

1281 Administrators; Colleges and Universities

1282 Administrators; Elementary and Secondary Education

1283 Administrators; Education and Related Fields, Not Elsewhere Classified

131 MANAGERS; MEDICINE AND HEALTH

132 PRODUCTION MANAGERS, INDUSTRIAL

133 CONSTRUCTION MANAGERS

134 PUBLIC UTILITIES MANAGERS

1341 Communications Operations Managers

1342 Transportation Facilities and Operations Managers

1343 Electricity, Gas, Water Supply, and Sanitary Services Managers

1344 Postmasters and Mail Superintendents

135 MANAGERS; SERVICE ORGANIZATIONS

1351 Managers; Food Serving and Lodging Establishments

1352 Managers; Entertainment and Recreation Facilities

1353 Managers; Property and Leasing

1354 Managers; Membership Organizations

1359 Managers; Service Organizations, Not Elsewhere Classified

136 MANAGERS; MINING, QUARRYING, WELL DRILLING, AND SIMILAR OPERATIONS

137 MANAGERS; ADMINISTRATIVE SERVICES

139 OFFICIALS AND ADMINISTRATORS; OTHER, NOT ELSEWHERE CLASSIFIED

14 MANAGEMENT RELATED OCCUPATIONS

141 ACCOUNTANTS, AUDITORS, AND OTHER FINANCIAL SPECIALISTS

1412 Accountants and Auditors

1414 Underwriters

1415 Loan Officers

1419 Other Financial Officers

142 MANAGEMENT ANALYSTS

143 PERSONNEL, TRAINING, AND LABOR RELATIONS SPECIALISTS

144 PURCHASING AGENTS AND BUYERS

1442 Buyers, Wholesale and Retail Trade, except Farm Products

1443 Purchasing Agents and Buyers, Farm Products

1449 Purchasing Agents and Buyers, Not Elsewhere Classified

145 BUSINESS AND PROMOTION AGENTS

147 INSPECTORS AND COMPLIANCE OFFICERS

1472 Construction Inspectors

1473 Inspectors and Compliance Officers, except Construction

149 MANAGEMENT RELATED OCCUPATIONS, NOT ELSEWHERE CLASSIFIED

Engineers, Surveyors and Architects

16 ENGINEERS, SURVEYORS AND ARCHITECTS

161 ARCHITECTS

162-3 ENGINEERS

TITLES OF OCCUPATIONAL GROUPS

1622 Aerospace Engineers
1623 Metallurgical and Materials Engineers
1624 Mining Engineers
1625 Petroleum Engineers
1626 Chemical Engineers
1627 Nuclear Engineers
1628 Civil Engineers
1632 Agricultural Engineers
1633 Electrical and Electronic Engineers
1634 Industrial Engineers
1635 Mechanical Engineers
1636 Computer Engineers
1637 Marine Engineers and Naval Architects
1639 Engineers, Not Elsewhere Classified
164 SURVEYORS AND MAPPING SCIENTISTS
1643 Land Surveyors
1644 Cartographers
1649 Surveyors and Mapping Scientists, Not Elsewhere Classified

Natural Scientists and Mathematicians

17 COMPUTER, MATHEMATICAL, AND OPERATIONS RESEARCH OCCUPATIONS

171 COMPUTER SCIENTISTS
1712 Computer Systems Analysts
1719 Computer Scientists, Not Elsewhere Classified
172 OPERATIONS AND SYSTEMS RESEARCHERS AND ANALYSTS
1721 Operations Researchers and Analysts
1722 Systems Researchers and Analysts, Except Computer
173 MATHEMATICAL SCIENTISTS
1732 Actuaries
1733 Statisticians
1739 Mathematical Scientists, Not Elsewhere Classified

18 NATURAL SCIENTISTS

184 PHYSICAL SCIENTISTS

1842 Astronomers
1843 Physicists
1845 Chemists, Except Biochemists
1846 Atmospheric and Space Scientists
1847 Geologists
1849 Physical Scientists, Not Elsewhere Classified

185 LIFE SCIENTISTS

1852 Forestry and Conservation Scientists
1853 Agricultural and Food Scientists
1854 Biological Scientists
1855 Medical Scientists

Social Scientists, Social Workers, Religious Workers, and Lawyers

19 SOCIAL SCIENTISTS AND URBAN PLANNERS

191 SOCIAL SCIENTISTS
1912 Economists
1913 Historians
1914 Political Scientists
1915 Psychologists
1916 Sociologists
1919 Social Scientists, Not Elsewhere Classified

192 URBAN AND REGIONAL PLANNERS

20 SOCIAL, RECREATION, AND RELIGIOUS WORKERS

203 SOCIAL AND RECREATION WORKERS

2032 Social Workers
2033 Recreation Workers

204 RELIGIOUS WORKERS

2042 Clergy
2049 Religious Workers, Not Elsewhere Classified

21 LAWYERS AND JUDGES

211 LAWYERS

212 JUDGES

STANDARD OCCUPATIONAL CLASSIFICATION MANUAL

Teachers, Librarians, and Counselors

22 TEACHERS; COLLEGE, UNIVERSITY AND OTHER POSTSECONDARY INSTITUTION

- 2212 Atmospheric, Earth, Marine, and Space Sciences Teachers
- 2213 Biological Sciences Teachers
- 2214 Chemistry Teachers
- 2215 Physics Teachers
- 2216 Natural Sciences Teachers, Not Elsewhere Classified
- 2217 Psychology Teachers
- 2218 Economics Teachers
- 2222 History Teachers
- 2223 Political Science Teachers
- 2224 Sociology Teachers
- 2225 Social Sciences Teachers, Not Elsewhere Classified
- 2226 Engineering Teachers
- 2227 Mathematical Sciences Teachers
- 2228 Computer Science Teachers
- 2231 Medical Science Teachers
- 2232 Health Specialties Teachers, Not Elsewhere Classified
- 2233 Business, Commerce and Marketing Teachers
- 2234 Agriculture Teachers
- 2235 Art, Drama, and Music Teachers
- 2236 Physical Education Teachers
- 2237 Education Teachers
- 2238 English Teachers
- 2242 Foreign Language Teachers
- 2243 Law Teachers
- 2244 Social Work Teachers
- 2245 Theology Teachers
- 2246 Trade and Industrial Teachers
- 2247 Home Economics Teachers
- 2249 Teachers; Postsecondary, Not Elsewhere Classified

23 TEACHERS, EXCEPT POSTSECONDARY INSTITUTION

231 PREKINDERGARTEN AND KINDERGARTEN TEACHERS

232 ELEMENTARY SCHOOL TEACHERS

233 SECONDARY SCHOOL TEACHERS

235 TEACHERS; SPECIAL EDUCATION

236 INSTRUCTIONAL COORDINATORS

239 ADULT EDUCATION AND OTHER TEACHERS, NOT ELSEWHERE CLASSIFIED

24 VOCATIONAL AND EDUCATIONAL COUNSELORS

25 LIBRARIANS, ARCHIVISTS, AND CURATORS

251 LIBRARIANS

252 ARCHIVISTS AND CURATORS

Health Diagnosing and Treating Practitioners

26 PHYSICIANS AND DENTISTS

261 PHYSICIANS

262 DENTISTS

27 VETERINARIANS

28 OTHER HEALTH DIAGNOSING AND TREATING PRACTITIONERS

281 OPTOMETRISTS

283 PODIATRISTS

289 HEALTH DIAGNOSING AND TREATING PRACTITIONERS, NOT ELSEWHERE CLASSIFIED

Registered Nurses, Pharmacists, Dietitians, Therapists, and Physician's Assistants

29 REGISTERED NURSES

30 PHARMACISTS, DIETITIANS, THERAPISTS, AND PHYSICIAN'S ASSISTANTS

301 PHARMACISTS

302 DIETITIANS

303 THERAPISTS

3031 Respiratory Therapists

3032 Occupational Therapists

3033 Physical Therapists

3034 Speech Pathologists and Audiologists

TITLES OF OCCUPATIONAL GROUPS

3039 Therapists, Not Elsewhere Classified

304 PHYSICIAN'S ASSISTANTS

Writers, Artists, Entertainers, and Athletes

32 WRITERS, ARTISTS, PERFORMERS, AND RELATED WORKERS

321 AUTHORS

322 DESIGNERS

323 MUSICIANS AND COMPOSERS

324 ACTORS AND DIRECTORS

325 PAINTERS, SCULPTORS, CRAFT-ARTISTS AND ARTIST-PRINTMAKERS

326 PHOTOGRAPHERS

327 DANCERS

328 PERFORMERS, NOT ELSEWHERE CLASSIFIED

329 WRITERS, ARTISTS, AND RELATED WORKERS; NOT ELSEWHERE CLASSIFIED

33 EDITORS, REPORTERS, PUBLIC RELATIONS SPECIALISTS, AND ANNOUNCERS

331 EDITORS AND REPORTERS

3312 Editors

3313 Reporters

332 PUBLIC RELATIONS SPECIALISTS AND PUBLICITY WRITERS

333 RADIO, TELEVISION AND OTHER ANNOUNCERS

34 ATHLETES AND RELATED WORKERS

Health Technologists and Technicians

36 HEALTH TECHNOLOGISTS AND TECHNICIANS

362 CLINICAL LABORATORY TECHNOLOGISTS AND TECHNICIANS

363 DENTAL HYGIENISTS

364 HEALTH RECORD TECHNOLOGISTS AND TECHNICIANS

365 RADIOLOGIC TECHNOLOGISTS AND TECHNICIANS

366 LICENSED PRACTICAL NURSES

369 HEALTH TECHNOLOGISTS AND TECHNICIANS, NOT ELSEWHERE CLASSIFIED

Technologists and Technicians, Except Health

37 ENGINEERING AND RELATED TECHNOLOGISTS AND TECHNICIANS

371 ENGINEERING TECHNOLOGISTS AND TECHNICIANS

3711 Electrical and Electronic Engineering Technologists and Technicians

3712 Industrial Engineering Technologists and Technicians

3713 Mechanical Engineering Technologists and Technicians

3719 Engineering Technologists and Technicians, Not Elsewhere Classified

372 DRAFTING OCCUPATIONS

373 SURVEYING AND MAPPING TECHNICIANS

3733 Surveying Technicians

3734 Cartographic Technicians

3739 Surveying and Mapping Technicians, Not Elsewhere Classified

38 SCIENCE TECHNOLOGISTS AND TECHNICIANS

382 BIOLOGICAL TECHNOLOGISTS AND TECHNICIANS, EXCEPT HEALTH

383 CHEMICAL AND NUCLEAR TECHNOLOGISTS AND TECHNICIANS

3831 Chemical Technologists and Technicians

3832 Nuclear Technologists and Technicians

3833 Petroleum Technologists and Technicians

384 MATHEMATICAL TECHNICIANS

389 SCIENCE TECHNOLOGISTS AND TECHNICIANS, NOT ELSEWHERE CLASSIFIED

39 TECHNICIANS; EXCEPT HEALTH, ENGINEERING, AND SCIENCE

392 AIR TRAFFIC CONTROLLERS

393 RADIO AND RELATED OPERATORS

396 LEGAL TECHNICIANS

397 PROGRAMERS

3971 Programers, Business

3972 Programers, Scientific

3974 Programers, Numerical, Tool and Process Control

398 TECHNICAL WRITERS

399 TECHNICIANS, NOT ELSEWHERE CLASSIFIED

Marketing and Sales Occupations

- 40 SUPERVISORS; MARKETING AND SALES OCCUPATIONS**
- 401 SUPERVISORS; SALES OCCUPATIONS, INSURANCE, REAL ESTATE, AND BUSINESS SERVICES
- 402 SUPERVISORS; SALES OCCUPATIONS, COMMODITIES EXCEPT RETAIL
- 403 SUPERVISORS; SALES OCCUPATIONS, RETAIL
- 41 INSURANCE, SECURITIES, REAL ESTATE, AND BUSINESS SERVICE SALES OCCUPATIONS**
- 412 INSURANCE, REAL ESTATE, AND SECURITIES SALES OCCUPATIONS
- 4122 Insurance Sales Occupations
- 4123 Real Estate Sales Occupations
- 4124 Securities and Financial Services Sales Occupations
- 415 BUSINESS SERVICE SALES OCCUPATIONS**
- 4152 Business Service, Except Advertising, Sales Occupations
- 4153 Advertising and Related Sales Occupations
- 42 SALES OCCUPATIONS, COMMODITIES EXCEPT RETAIL**
- 421 SALES ENGINEERS**
- 423 TECHNICAL SALES WORKERS AND SERVICE ADVISORS**
- 4232 Technical Sales Workers, Aircraft
- 4233 Technical Sales Workers, Agricultural Equipment and Supplies
- 4234 Technical Sales Workers, Electronic Equipment
- 4235 Technical Sales Workers, Industrial Machinery, Equipment, and Supplies
- 4236 Technical Sales Workers, Medical and Dental Equipment and Supplies
- 4237 Technical Sales Workers; Chemicals and Chemical Products
- 4239 Technical Sales Workers, Not Elsewhere Classified
- 424 SALES REPRESENTATIVES**
- 4242 Sales Representatives, Commercial and Industrial Equipment and Supplies
- 4243 Sales Representatives, Garments and Related Textile Products
- 4244 Sales Representatives, Motor Vehicles and Supplies
- 4245 Sales Representatives; Pulp, Paper, and Paper Products
- 4246 Sales Representatives; Farm Products and Livestock
- 4249 Sales Representatives; Not Elsewhere Classified
- 43 SALES OCCUPATIONS, RETAIL**
- 434-5 SALESPERSONS, COMMODITIES**
- 4342 Salespersons; Motor Vehicles, Mobile Homes, and Supplies
- 4343 Salespersons; Musical Instruments and Supplies
- 4344 Salespersons; Boats and Marine Equipment and Supplies
- 4345 Salespersons; Sporting Goods
- 4346 Salespersons; Garments and Textile Products
- 4347 Salespersons; Books, Stamps, Coins, and Stationery
- 4348 Salespersons; Furniture and Home Furnishings
- 4351 Salespersons; Shoes
- 4352 Salespersons; Radio, Television, High Fidelity, and Household Appliances
- 4353 Salespersons; Hardware
- 4354 Salespersons; Cosmetics, Toiletries, and Allied Products
- 4356 Salespersons; Jewelry and Related Products
- 4359 Salespersons; Not Elsewhere Classified
- 436 SALES OCCUPATIONS; OTHER**
- 4362 Sales Clerks
- 4363 Counter Clerks
- 4364 Cashiers
- 4365 News Vendors
- 4366 Street Vendors, Door-to-door Sales Workers, and Related Occupations
- 4367 Salespersons; Parts
- 4369 Sales Occupations; Services, Not Elsewhere Classified
- 44 SALES RELATED OCCUPATIONS**
- 444 APPRAISERS AND RELATED OCCUPATIONS**
- 445 DEMONSTRATORS, PROMOTERS, AND MODELS**
- 446 SHOPPERS**
- 447 AUCTIONEERS**
- 449 SALES OCCUPATIONS; OTHER, NOT ELSEWHERE CLASSIFIED**

Administrative Support Occupations, including Clerical

- 45 SUPERVISORS; ADMINISTRATIVE SUPPORT OCCUPATIONS, INCLUDING CLERICAL**
- 4511 Supervisors; General Office Occupations
- 4512 Supervisors; Computer and Peripheral Equipment Operators

TITLES OF OCCUPATIONAL GROUPS

4513 Supervisors; Secretaries, Stenographers and Typists
 4514 Supervisors; Information Clerks
 4516 Supervisors; Correspondence Clerks and Order Clerks
 4519 Supervisors; Record Clerks
 4521 Supervisors; Financial Record Processing Occupations
 4522 Supervisors; Duplicating, Mail and Other Office Machine Operators
 4523 Chief Communications Operators
 4524 Supervisors; Mail and Message Distribution Clerks
 4525 Supervisors; Material Recording, Scheduling, and Distributing Clerks
 4528 Supervisors; Adjusters, Investigators, and Collectors
 4529 Supervisors; Miscellaneous Administrative Support Occupations
46-47 ADMINISTRATIVE SUPPORT OCCUPATIONS, INCLUDING CLERICAL
461 COMPUTER AND PERIPHERAL EQUIPMENT OPERATORS
 4612 Computer Operators
 4613 Peripheral Equipment Operators
462 SECRETARIES, STENOGRAPHERS AND TYPISTS
 4622 Secretaries
 4623 Stenographers
 4624 Typists
463 GENERAL OFFICE OCCUPATIONS
464 INFORMATION CLERKS
 4642 Interviewing Clerks
 4643 Hotel Clerks
 4644 Reservation Agents and Transportation Ticket Clerks
 4645 Receptionists
 4649 Information Clerks, Not Elsewhere Classified
466 CORRESPONDENCE CLERKS AND ORDER CLERKS
 4662 Classified-ad Clerks
 4663 Correspondence Clerks
 4664 Order Clerks
469 RECORD CLERKS
 4692 Personnel Clerks, Except Payroll and Timekeeping
 4694 Library Clerks
 4696 File Clerks
 4699 Record Clerks, Not Elsewhere Classified
471 FINANCIAL RECORD PROCESSING OCCUPATIONS
 4712 Bookkeepers and Accounting and Auditing Clerks
 4713 Payroll and Timekeeping Clerks
 4715 Billing Clerks
 4716 Cost and Rate Clerks
 4718 Billing, Posting, and Calculating Machine Operators
472 DUPLICATING, MAIL AND OTHER OFFICE MACHINE OPERATORS
 4722 Duplicating Machine Operators
 4723 Mail Preparing and Handling Machine Operators
 4729 Office Machine Operators, Not Elsewhere Classified
473 COMMUNICATIONS EQUIPMENT OPERATORS
 4732 Telephone Operators
 4733 Telegraphers
 4739 Communications Equipment Operators, Not Elsewhere Classified
474 MAIL AND MESSAGE DISTRIBUTING OCCUPATIONS
 4742 Postal Clerks, Except Mail Carriers
 4743 Mail Carriers, Post Office
 4744 Mail Clerks, Except Post Office
 4745 Messengers
475 MATERIAL RECORDING, SCHEDULING, AND DISTRIBUTING CLERKS
 4751 Dispatchers
 4752 Production and Planning Clerks
 4753 Traffic, Shipping, and Receiving Clerks
 4754 Stock and Inventory Clerks
 4755 Meter Readers
 4756 Weighers, Measurers, and Checkers
 4757 Samplers
 4758 Expeditors
 4759 Material Recording, Scheduling, and Distributing Clerks, Not Elsewhere Classified
478 ADJUSTERS, INVESTIGATORS, AND COLLECTORS
 4782 Insurance Adjusters, Examiners, and Investigators
 4783 Investigators and Adjusters, Except Insurance
 4784 Clerks, Social Welfare

STANDARD OCCUPATIONAL CLASSIFICATION MANUAL

4786 Bill and Account Collectors
4787 License Clerks
479 MISCELLANEOUS ADMINISTRATIVE SUPPORT OCCUPATIONS, INCLUDING CLERICAL
4791 Bank Tellers
4792 Proof Readers
4793 Data Entry Keyers
4794 Statistical Clerks
4795 Teacher Aides
4799 Administrative Support Occupations, including Clerical, Not Elsewhere Classified

Service Occupations

50 PRIVATE HOUSEHOLD OCCUPATIONS

502 DAY WORKERS
503 LAUNDERERS AND IRONERS
504 COOKS, PRIVATE HOUSEHOLD
505 HOUSEKEEPERS AND BUTLERS
506 CHILD CARE WORKERS, PRIVATE HOUSEHOLD
507 PRIVATE HOUSEHOLD CLEANERS AND SERVANTS
509 PRIVATE HOUSEHOLD OCCUPATIONS, NOT ELSEWHERE CLASSIFIED

51 PROTECTIVE SERVICE OCCUPATIONS

511 SUPERVISORS; SERVICE OCCUPATIONS, PROTECTIVE
5111 Supervisors; Firefighting and Fire Prevention Occupations
5112 Supervisors; Police and Detectives
5113 Supervisors; Guards
512 FIREFIGHTING AND FIRE PREVENTION OCCUPATIONS
5122 Fire Inspection and Fire Prevention Occupations
5123 Firefighting Occupations
513 POLICE AND DETECTIVES
5132 Police and Detectives, Public Service
5133 Correctional Institution Officers
5134 Sheriffs, Bailiffs, and Other Law Enforcement Officers
514 GUARDS

5142 Crossing Guards
5144 Guards and Police, Except Public Service
5149 Protective Service Occupations, Not Elsewhere Classified
52 SERVICE OCCUPATIONS, EXCEPT PRIVATE HOUSEHOLD AND PROTECTIVE

521 FOOD AND BEVERAGE PREPARATION AND SERVICE OCCUPATIONS

5211 Supervisors; Food and Beverage Preparation and Service Occupations
5212 Bartenders
5213 Waiters and Waitresses
5214 Cooks, Except Short Order
5215 Short-order Cooks
5216 Food Counter, Fountain and Related Occupations
5217 Kitchen Workers, Food Preparation
5218 Waiters'/Waitresses' Assistants
5219 Miscellaneous Food and Beverage Preparation Occupations

523 HEALTH SERVICE OCCUPATIONS

5232 Dental Assistants
5233 Health Aides, Except Nursing
5236 Nursing Aides, Orderlies, and Attendants

524 CLEANING AND BUILDING SERVICE OCCUPATIONS, EXCEPT PRIVATE HOUSEHOLD

5241 Supervisors; Cleaning and Building Service Workers
5242 Maids and Housemen
5244 Janitors and Cleaners
5245 Elevator Operators
5246 Pest Control Occupations
5249 Cleaning and Building Service Occupations, Not Elsewhere Classified

525-6 PERSONAL SERVICE OCCUPATIONS

5251 Supervisors; Personal Service Occupations
5252 Barbers
5253 Hairdressers and Cosmetologists
5254 Attendants, Amusement and Recreation Facilities
5255 Guides
5256 Ushers
5257 Public Transportation Attendants
5258 Wardrobe and Dressing Room Attendants

TITLES OF OCCUPATIONAL GROUPS

5262 Baggage Porters and Bellhops
5263 Welfare Service Aides
5264 Child Care Workers, Except Private Household
5269 Personal Service Occupations, Not Elsewhere Classified

Agricultural, Forestry and Fishing Occupations

55 FARM OPERATORS AND MANAGERS

551 FARMERS (WORKING PROPRIETORS)

5512 General Farmers
5513 Crop, Vegetable, Fruit and Tree Nut Farmers
5514 Livestock, Dairy, Poultry and Fish Farmers
5515 Horticultural Specialty Farmers

552 FARM MANAGERS

5522 Managers; General Farm
5523 Managers; Crop, Vegetable, Fruit and Tree Nut Farm
5524 Managers; Livestock, Dairy, Poultry and Fish Farm
5525 Managers; Horticultural Specialty Farm

56 OTHER AGRICULTURAL AND RELATED OCCUPATIONS

561 FARM OCCUPATIONS, EXCEPT MANAGERIAL

5611 Supervisors; Farm Workers
5612 General Farm Workers
5613 Field Crop and Vegetable Farm Workers (Hand)
5614 Orchard and Vineyard and Related Workers (Hand)
5615 Irrigation Workers
5616 Farm Machinery Operators
5617 Livestock Workers
5618 Marine Life Cultivation Workers
5619 Nursery Workers

562 RELATED AGRICULTURAL OCCUPATIONS

5621 Supervisors; Related Agricultural Workers
5622 Groundskeepers and Gardeners, Except Farm
5624 Animal Caretakers, Except Farm
5625 Graders and Sorters; Agricultural Products
5627 Inspectors; Agricultural Products

57 FORESTRY AND LOGGING OCCUPATIONS

571 SUPERVISORS; FORESTRY AND LOGGING WORKERS

572 FORESTRY WORKERS, EXCEPT LOGGING

573 TIMBER CUTTING AND RELATED OCCUPATIONS

579 LOGGING OCCUPATIONS, NOT ELSEWHERE CLASSIFIED

58 FISHERS, HUNTERS, AND TRAPPERS

583 FISHERS

584 HUNTERS AND TRAPPERS

Mechanics and Repairers

60 SUPERVISORS; MECHANICS AND REPAIRERS

61 MECHANICS AND REPAIRERS

611 VEHICLE AND MOBILE EQUIPMENT MECHANICS AND REPAIRERS

6111 Automobile Mechanics
6112 Bus and Truck Engine, and Diesel Engine Mechanics
6113 Aircraft Engine Mechanics
6114 Small Engine Repairers
6115 Automotive Body and Related Repairers
6116 Aircraft Mechanics (Except Engine Specialists)
6117 Heavy Equipment Mechanics
6118 Farm Equipment Mechanics

613 INDUSTRIAL MACHINERY REPAIRERS *

614 MACHINERY MAINTENANCE OCCUPATIONS

615 ELECTRICAL AND ELECTRONIC EQUIPMENT REPAIRERS

6151 Communications Equipment Repairers
6152 Electric Motor, Transformer, and Related Repairers
6153 Electrical and Electronic Repairers, Commercial and Industrial Equipment
6154 Data Processing Equipment Repairers
6155 Electronic Repairers, Home-entertainment Equipment
6156 Household Appliance and Power Tool Repairers
6157 Telephone Line Installers and Repairers

6158 Telephone Installers and Repairers
 6159 Miscellaneous Electrical and Electronic Equipment Repairers
 616 HEATING, AIR-CONDITIONING, AND REFRIGERATION MECHANICS
 617 MISCELLANEOUS MECHANICS AND REPAIRERS
 6171 Camera, Watch, and Other Precision Instrument Repairers
 6172 Musical Instrument Repairers and Tuners
 6173 Locksmiths and Safe Repairers
 6174 Office Machine Repairers
 6175 Mechanical Controls and Valve Repairers
 6176 Elevator Installers and Repairers
 6177 Riggers
 6178 Millwrights
 6179 Mechanics and Repairers, Not Elsewhere Classified

Construction and Extractive Occupations

63 SUPERVISORS; CONSTRUCTION AND EXTRACTIVE OCCUPATIONS

631 SUPERVISORS; CONSTRUCTION

6311 Supervisors; Overall Construction
 6312 Supervisors; Brickmasons, Stonemasons, and Hard Tile Setters
 6313 Supervisors; Carpenters and Related Workers
 6314 Supervisors; Electricians and Power Transmission Installers
 6315 Supervisors; Painters, Paperhangers, and Plasterers
 6316 Supervisors; Plumbers and Pipefitters and Steamfitters
 6318 Supervisors; Other Construction Trades

632 SUPERVISORS; EXTRACTIVE OCCUPATIONS

64 CONSTRUCTION TRADES

641 BRICKMASONS, STONEMASONS, AND HARD TILE SETTERS

6412 Brickmasons
 6413 Stonemasons
 6414 Tile Setters, Hard

642 CARPENTERS AND RELATED WORKERS

6422 Carpenters
 6424 Drywall Installers

643 ELECTRICIANS AND POWER TRANSMISSION INSTALLERS

6432 Electricians
 6433 Electrical Power Installers and Repairers

644 PAINTERS, PAPERHANGERS, AND PLASTERERS

6442 Painters (Construction and Maintenance)
 6443 Paperhangers
 6444 Plasterers

645 PLUMBERS, PIPEFITTERS AND STEAMFITTERS

646-7 OTHER CONSTRUCTION TRADES

6462 Carpet and Soft Tile Installers
 6463 Concrete and Terrazzo Finishers
 6464 Glaziers
 6465 Insulation Workers
 6466 Paving, Surfacing, and Tamping Equipment Operators
 6467 Rail and Track Laying Equipment Operators
 6468 Roofers
 6472 Sheetmetal Duct Installers
 6473 Structural Metal Workers
 6474 Drillers, Earth
 6475 Air Hammer Operators
 6476 Pile Driving Operators
 6479 Construction Trades, Not Elsewhere Classified

65 EXTRACTIVE OCCUPATIONS

652 DRILLERS, OIL WELL

653 EXPLOSIVE WORKERS

654 MINING MACHINE OPERATORS

656 EXTRACTIVE OCCUPATIONS, NOT ELSEWHERE CLASSIFIED

Precision Production Occupations

67 SUPERVISORS; PRECISION PRODUCTION OCCUPATIONS

68 PRECISION PRODUCTION OCCUPATIONS

681-2 PRECISION METAL WORKERS

TITLES OF OCCUPATIONAL GROUPS

6811 Tool and Die Makers
6812 Precision Assemblers (Metal)
6813 Machinists
6814 Boilermakers
6816 Precision Grinders, Filers, and Tool Sharpeners
6817 Patternmakers and Model Makers (Metal)
6821 Lay-out Workers
6822 Precision Hand Molders and Shapers (Jewelers)
6823 Engravers
6824 Sheet Metal Workers
6829 Miscellaneous Precision Metal Workers
683 PRECISION WOODWORKERS
6831 Patternmakers and Model Makers, Wood
6832 Cabinet Makers and Bench Carpenters
6835 Furniture Finishers
6839 Miscellaneous Precision Woodworkers
684 PRECISION PRINTING OCCUPATIONS
6841 Precision Typesetters
6842 Precision Lithographers and Photoengravers
6844 Bookbinders
6849 Miscellaneous Precision Printing Occupations
685 PRECISION TEXTILE, APPAREL AND FURNISHINGS WORKERS
6852 Tailors and Dressmakers, Hand
6853 Upholsterers
6854 Shoemakers and Leather Workers and Repairers
6855 Precision Laundering, Cleaning, and Dyeing Occupations
6856 Apparel and Fabric Patternmakers
6859 Miscellaneous Precision Apparel and Fabric Workers
686 PRECISION WORKERS; ASSORTED MATERIALS
6861 Precision Hand Molders and Shapers (Except Jewelers)
6862 Precision Patternmakers, Lay-out Workers and Cutters
686 Detail Design Painters and Decorators
687 Optical Goods Workers
688 Dental Laboratory Technicians
6866 Gem and Diamond Working Occupations
6867 Precision Electrical and Electronic Equipment Assemblers
6868 Photographic Process Workers
6869 Miscellaneous Precision Workers, Not Elsewhere Classified
687 PRECISION FOOD PRODUCTION OCCUPATIONS
6871 Butchers and Meat Cutters
6872 Bakers
6873 Batchmakers (Candymakers, Cheesemakers, Etc.)
6879 Miscellaneous Precision Food Workers
688 PRECISION INSPECTORS, TESTERS, AND RELATED WORKERS
6881 Precision Inspectors, Testers, and Graders
6882 Precision Adjusters and Calibrators
69 PLANT AND SYSTEM OPERATORS
691 WATER AND SEWAGE TREATMENT PLANT OPERATORS
692 GAS PLANT OPERATORS
693 POWER PLANT OPERATORS
6931 Stationary Engineers
6932 Power Plant and Systems Operators, except Stationary Engineers
694 CHEMICAL PLANT OPERATORS
695 PETROLEUM PLANT OPERATORS
696 MISCELLANEOUS PLANT OR SYSTEM OPERATORS

Production Working Occupations

71 SUPERVISORS; PRODUCTION OCCUPATIONS
73-74 MACHINE SETUP OPERATORS
731-2 METALWORKING AND PLASTIC WORKING MACHINE SETUP OPERATORS
7312 Lathe and Turning Machine Setup Operators
7313 Milling and Planing Machine Setup Operators
7314 Punching and Shearing Machine Setup Operators
7315 Extruding and Drawing Machine Setup Operators
7316 Rolling Machine Setup Operators
7317 Press and Brake Machine Setup Operators
7318 Drilling and Boring Machine Setup Operators

STANDARD OCCUPATIONAL CLASSIFICATION MANUAL

- 7319 Forging Machine Setup Operators
- 7322 Grinding, Abrading, Buffing, and Polishing Machine Setup Operators
- 7324 Lapping and Honing Machine Setup Operators
- 7326 Numerical Control Machine Setup Operators
- 7329 Miscellaneous Metalworking and Plastic Working Machine Setup Operators
- 733 METAL FABRICATING MACHINE SETUP OPERATORS
- 7332 Welding Machine Setup Operators
- 7333 Soldering and Brazing Machine Setup Operators
- 7339 Miscellaneous Fabricating Machine Setup Operators
- 734 METAL AND PLASTIC PROCESSING MACHINE SETUP OPERATORS
- 7342 Molding and Casting Machine Setup Operators
- 7343 Plating and Coating Machine Setup Operators
- 7344 Heating Equipment Setup Operators
- 7349 Miscellaneous Metal and Plastic Processing Machine Setup Operators
- 743 WOODWORKING MACHINE SETUP OPERATORS
- 7431 Lathe and Turning Machine Setup Operators
- 7432 Router and Planer Machine Setup Operators
- 7433 Sawing Machine Setup Operators
- 7434 Sanding Machine Setup Operators
- 7435 Shaping and Joining Machine Setup Operators
- 7439 Miscellaneous Woodworking Machine Setup Operators
- 744 PRINTING MACHINE SETUP OPERATORS
- 7443 Printing Press Setup Operators
- 7444 Photoengraving and Lithographing Machine Setup Operators
- 7449 Miscellaneous Printing Machine Setup Operators
- 745 TEXTILE MACHINE SETUP OPERATORS
- 7451 Winding and Twisting Machine Setup Operators
- 7452 Knitting and Weaving Machine Setup Operators
- 7459 Textile Machine Setup Operators, Not Elsewhere Classified
- 746-7 ASSORTED MATERIALS: MACHINE SETUP OPERATORS
- 7462 Packaging and Filling Machine Setup Operators
- 7463 Extruding and Forming Machine Setup Operators
- 7467 Compressing and Compacting Machine Setup Operators
- 7472 Roasting and Baking Machine Setup Operators
- 7474 Folding Machine Setup Operators
- 7476 Still, Clarifying, and Precipitating Machine Setup Operators
- 7477 Crushing, Grinding and Polishing Machine Setup Operators
- 7478 Slicing and Cutting Machine Setup Operators
- 7479 Miscellaneous Machine Setup Operators
- 75-76 MACHINE OPERATORS AND TENDERS
- 751-2 METALWORKING AND PLASTIC WORKING MACHINE OPERATORS AND TENDERS
- 7512 Lathe and Turning Machine Operators and Tenders
- 7513 Milling and Planing Machine Operators and Tenders
- 7514 Punching and Shearing Machine Operators and Tenders
- 7515 Extruding and Drawing Machine Operators and Tenders
- 7516 Rolling Machine Operators and Tenders
- 7517 Press and Brake Machine Operators and Tenders
- 7518 Drilling and Boring Machine Operators and Tenders
- 7519 Forging Machine Operators and Tenders
- 7522 Grinding, Abrading, Buffing and Polishing Machine Operators and Tenders
- 7529 Miscellaneous Metalworking and Plastic Working Machine Operators and Tenders
- 753 METAL FABRICATING MACHINE OPERATORS AND TENDERS
- 7532 Welding Machine Operators and Tenders
- 7533 Soldering and Brazing Machine Operators and Tenders
- 7539 Miscellaneous Fabricating Machine Operators and Tenders
- 754 METAL AND PLASTIC PROCESSING MACHINE OPERATORS AND TENDERS
- 7542 Molding and Casting Machine Operators and Tenders
- 7543 Plating and Coating Machine Operators and Tenders
- 7544 Heating Equipment Operators and Tenders
- 7549 Miscellaneous Metal and Plastic Processing Machine Operators and Tenders
- 763 WOODWORKING MACHINE OPERATORS AND TENDERS
- 7631 Lathe and Turning Machine Operators and Tenders
- 7632 Router and Planer Machine Operators and Tenders
- 7633 Sawing Machine Operators and Tenders
- 7634 Sanding Machine Operators and Tenders
- 7635 Shaping and Joining Machine Operators and Tenders
- 7636 Nailing and Tacking Machine Operators and Tenders
- 7639 Miscellaneous Woodworking Machine Operators and Tenders
- 764 PRINTING MACHINE OPERATORS AND TENDERS

TITLES OF OCCUPATIONAL GROUPS

- 7642 Typesetting and Composing Machine Operators and Tenders
- 7643 Printing Machine Operators and Tenders
- 7644 Photoengraving and Lithographing Machine Operators and Tenders
- 7649 Printing Machine Operators and Tenders, Not Elsewhere Classified
- 765 TEXTILE, APPAREL AND FURNISHINGS MACHINE OPERATORS AND TENDERS
- 7651 Winding and Twisting Machine Operators and Tenders
- 7652 Knitting and Weaving Machine Operators and Tenders
- 7654 Textile Cutting Machine Operators and Tenders
- 7655 Textile Sewing Machine Operators and Tenders
- 7656 Shoe Machine Operators and Tenders
- 7657 Pressing Machine Operators
- 7658 Laundering and Dry Cleaning Machine Operators and Tenders
- 7659 Miscellaneous Textile Machine Operators and Tenders
- 766-7 MACHINE OPERATORS AND TENDERS; ASSORTED MATERIALS
- 7661 Cementing and Gluing Machine Operators and Tenders
- 7662 Packaging and Filling Machine Operators and Tenders
- 7663 Extruding and Forming Machine Operators and Tenders
- 7664 Mixing and Blending Machine Operators and Tenders
- 7665 Cooling and Freezing Equipment Operators and Tenders
- 7666 Separating and Filtering Machine Operators and Tenders
- 7667 Compressing and Compacting Machine Operators and Tenders
- 7668 Boiler Operators and Tenders (Low Pressure)
- 7669 Coating, Painting, and Spraying Machine Operators and Tenders
- 7671 Photographic Processing Machine Operators
- 7672 Roasting and Baking Machine Operators and Tenders
- 7673 Washing, Cleaning and Pickling Equipment Operators and Tenders
- 7674 Folding Machine Operators and Tenders
- 7675 Furnace, Kiln, and Oven Operators and Tenders
- 7676 Still, Clarifier and Precipitator Operators and Tenders
- 7677 Crushing, Grinding and Polishing Machine Operators and Tenders
- 7678 Slicing and Cutting Machine Operators and Tenders
- 7679 Miscellaneous Machine Operators and Tenders, Not Elsewhere Classified
- 77 FABRICATORS, ASSEMBLERS, AND HAND WORKING OCCUPATIONS
- 771 WELDERS AND SOLDERERS
- 7714 Welders And Cutters
- 7717 Solderers And Brazers
- 772 ASSEMBLERS
- 774 FABRICATORS, NOT ELSEWHERE CLASSIFIED
- 775 HAND WORKING OCCUPATIONS
- 7752 Hand Sewing Occupations
- 7753 Hand Cutting And Trimming Occupations
- 7754 Hand Molding And Casting Occupations
- 7755 Hand Forming And Shaping Occupations
- 7756 Hand Painting, Coating And Decorating Occupations
- 7757 Hand Engraving And Printing Occupations
- 7758 Hand Grinding And Polishing Occupations
- 7759 Miscellaneous Hand Working Occupations
- 78 PRODUCTION INSPECTORS, TESTERS, SAMPLERS, AND WEIGHERS
- 782 PRODUCTION INSPECTORS, CHECKERS AND EXAMINERS
- 783 PRODUCTION TESTERS
- 784 PRODUCTION SAMPLERS AND WEIGHERS
- 785 GRADERS AND SORTERS, EXCEPT AGRICULTURAL
- 787 PRODUCTION EXPEDITERS

Transportation and Material Moving Occupations

- 81 SUPERVISORS; TRANSPORTATION AND MATERIAL MOVING OCCUPATIONS
- 811 SUPERVISORS; MOTORIZED EQUIPMENT OPERATORS
- 8111 Supervisors; Motor Vehicle Operators
- 8113 Railroad Conductors and Yardmasters
- 812 SUPERVISORS; MATERIAL MOVING EQUIPMENT OPERATORS
- 82 TRANSPORTATION OCCUPATIONS
- 821 MOTOR VEHICLE OPERATORS
- 8212 Truck Drivers, Tractor-trailer
- 8213 Truck Drivers, Heavy
- 8214 Truck Drivers, Light (Including Delivery and Route Drivers)
- 8215 Bus Drivers
- 8216 Taxicab Drivers and Chauffeurs

8218 Driver-Sales Workers
 8219 Other Motor Transportation Occupations, Not Elsewhere Classified
823 RAIL TRANSPORTATION OCCUPATIONS
 8232 Locomotive Operating Occupations
 8233 Railroad Brake, Signal, and Switch Operators
 8239 Rail Vehicle Operators, Not Elsewhere Classified
824 WATER TRANSPORTATION OCCUPATIONS
 8241 Ship Captains and Mates
 8242 Boat and Barge Operators
 8243 Sailors and Deckhands
 8244 Marine Engineers
 8245 Bridge, Lock, and Lighthouse Tenders
825 AIRPLANE PILOTS AND NAVIGATORS
828 TRANSPORTATION INSPECTORS
83 MATERIAL MOVING OCCUPATIONS, EXCEPT TRANSPORTATION
831 MATERIAL MOVING EQUIPMENT OPERATORS
 8312 Operating Engineers
 8313 Longshore Equipment Operators
 8314 Hoist and Winch Operators
 8315 Crane and Tower Operators
 8316 Excavating and Loading Machine Operators
 8317 Grader, Dozer, and Scraper Operators
 8318 Industrial Truck and Tractor Equipment Operators
 8319 Miscellaneous Material Moving Equipment Operators

Handlers, Equipment Cleaners, Helpers and Laborers

85 SUPERVISORS; HANDLERS, EQUIPMENT CLEANERS, HELPERS, AND LABORERS
86 HELPERS
861 HELPERS; MACHINE OPERATORS AND TENDERS
 8611 Helpers; Metalworking and Plastic Working Machine Operators and Tenders
 8614 Helpers; Metal and Plastic Processing Machine Operators and Tenders
 8615 Helpers; Woodworking Machine Operators and Tenders
 8616 Helpers; Printing Machine Operators and Tenders
 8617 Helpers; Textile, Apparel and Furnishings Machine Operators and Tenders
 8618 Helpers; Machine Operators and Tenders, Assorted Materials
 8619 Helpers; Precision Production Occupations and Setup Operators
862 HELPERS; FABRICATORS AND INSPECTORS
863 HELPERS; MECHANICS AND REPAIRERS
 8632 Helpers; Vehicle and Mobile Equipment Mechanics and Repairers
 8633 Helpers; Industrial Machinery Repairers
 8635 Helpers; Electrical and Electronic Equipment Repairers
 8637 Helpers; Miscellaneous Mechanics and Repairers
864 HELPERS; CONSTRUCTION TRADES
 8641 Helpers; Brickmasons, Stonemasons, and Hard Tile Setters
 8642 Helpers; Carpenters and Related Workers
 8643 Helpers; Electricians and Power Transmission Installers
 8644 Helpers; Painters, Paperhangers, and Plasterers
 8645 Helpers; Plumbers, Pipefitters and Steamfitters
 8646 Helpers; Surveyors
 8648 Helpers; Other Construction Trades
865 HELPERS; EXTRACTIVE OCCUPATIONS
87 HANDLERS, EQUIPMENT CLEANERS AND LABORERS
871 CONSTRUCTION LABORERS
872 FREIGHT, STOCK, AND MATERIAL MOVERS; HAND
 8722 Garbage Collectors
 8723 Stevedores
 8724 Stock Handlers and Baggers
 8725 Machine Feeders and Offbearers
 8726 Freight, Stock, and Material Movers, Not Elsewhere Classified
873 GARAGE AND SERVICE STATION RELATED OCCUPATIONS
874 PARKING LOT ATTENDANTS
875 VEHICLE WASHERS AND EQUIPMENT CLEANERS
876 MISCELLANEOUS MANUAL OCCUPATIONS
 8761 Hand Packers and Packagers
 8769 Manual Occupations, Not Elsewhere Classified

TITLES OF OCCUPATIONAL GROUPS

Military Occupations

91 MILITARY OCCUPATIONS

Miscellaneous Occupations

99 MISCELLANEOUS OCCUPATIONS